
APPENDIX A
FEDERAL REGISTER NOTICES

**NOTICE OF INTENT
TO PREPARE ENVIRONMENTAL IMPACT STATEMENT FOR THE
HARDWOOD RANGE EXPANSION AND RELATED AIRSPACE ACTIONS,
HARDWOOD RANGE, WOOD COUNTY WISCONSIN**

The United States Air Force and the Air National Guard are announcing their intent to prepare an Environmental Impact Statement (EIS) to analyze the proposed action regarding the Hardwood Range expansion into Wood County Wisconsin and modification and/or expansion of related airspace in the states of Iowa, Minnesota and Wisconsin. This action will be known as the Hardwood EIS.

The Air National Guard proposes to modify Hardwood Air-to-Surface Gunnery Range located on the northern most portion of Juneau County near the town of Finley, Wisconsin. This proposed action will expand the land area by approximately 7,130 acres north of the current boundaries into Wood County. A new target area, an area for an aircraft assault strip and a new drop zone is proposed to be developed. The action will provide for multi-directional entry into the range, allowing each unit to accomplish a broader range of training, and helping to reduce the expense incurred in deploying to more distant ranges. This action is also being proposed to enhance operational safety. The proposed expansion would ensure military flights remain over land owned or controlled by the government, further increasing safety for the civilian population near the range. The number of aircraft sorties flown annually would increase from 3,401 to 3,966. Restricted airspace would be modified to include the contiguous new range boundaries to ensure the safety of non-participating aircraft. The action would lower the bottom altitude and expand the lateral confines of the Restricted Airspace 6904B. It would also increase the maximum altitude of R-6904A and R-6904B from 17,000 MSL to 25,000 MSL.

Three stand-alone airspace actions are being proposed which are independent of the range expansion. The first proposed airspace action will establish six new Military Training Routes (MTRs) south of the range that will encompass two ground tracks. The proposed ground tracks would be oriented predominately north-south, and extend approximately 200 Nautical Miles (NM) from Hardwood Range. The two ground tracks merge approximately 60 NM south of the range. The location is southwestern Wisconsin and northeastern Iowa. A total of approximately 2,150 flights would be flown annually along the six routes. These MTRs will allow Air National Guard and other military units closer training airspace, allowing the units to accomplish more training on each flight.

The second airspace proposal will increase the number of sorties flown from 185 to 1,340 in the existing Volk South Military Operations Area (MOA). This MOA is located south of Hardwood Range. It is presently used in conjunction with the range and other adjoining airspace for aircraft training sorties. The use of multi-directional entries into Hardwood Range would increase utilization. Also, new weapons and tactics would require increased use of the Volk South MOA in conjunction with adjoining Volk West and Volk East MOAs.

The third airspace action is to reassess Visual Route-1616 for increased utilization. This MTR begins in southeastern Minnesota and traverses easterly into Hardwood Range. The utilization

would increase from 2,187 to 2,423 sorties annually. This increase is expected to satisfy users training requirements.

Alternatives under consideration include establishing a new air-to-surface gunnery range, using the existing US Army Range at Fort McCoy, closing Hardwood Range and redirecting units to other ranges, and the no action alternative.

The Air Force and Air National Guard are planning to conduct a series of scoping meetings on the following dates and times at the indicated locations:

1. Mauston Expo Center, Hickory Street, Mauston, WI, February 14, 1995, 7: PM.
2. Independence High School, 108 6th Street, Independence, WI, February 15, 1995, 7:00 PM.
3. Pittsville Community Center, Main Street and 3rd Avenue, Pittsville, WI, February 16, 1995, 7:00 PM.
4. Tilford Middle School, 308 East 13th Street, Vinton, IA, February 21, 1995, 7:00 PM
5. Boscobel Community Center, Oak Street, Boscobel, WI, February 22, 1995, 7:00 PM.
6. Elkader Community School, North 1st Street, Elkader, IA, February 23, 1995, 7:00 PM

The purpose of these meetings is to present information concerning the proposed actions and alternatives under consideration and solicit public input on issues to be addressed, effort to be expended, and alternatives that should be addressed in the EIS. Questions or clarifications concerning the proposal, or any other information presented, will be answered as they relate to the scope of the effort anticipated.

The scoping meetings will provide opportunities for clarification of the proposal and statements from representatives of government agencies and the public. Additional presentations and questions will be accepted at the end of the meeting. Submission of written and oral comments and questions will be accepted. Submission of written comments is encouraged but is not required. Written comments and questions of any length submitted at the meeting or during the scoping period will be considered in their entirety and will carry the same weight as oral comment.

The Air Force and Air National Guard will accept comments at the address below at any time during the environmental impact analysis process. To ensure the Air Force and the Air National Guard have sufficient time to consider public input in the preparation of the Draft EIS, comments should be submitted to the address below by March 21, 1995. For further information concerning the preparation of the Hardwood EIS, or to provide written comment, contact:

**Program Manager, Hardwood EIS
Air National Guard Readiness Center
ANGRC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20331-5157**

**NOTICE OF AVAILABILITY OF THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED HARDWOOD
RANGE EXPANSION AND ASSOCIATED AIRSPACE ACTIONS**

The United States Air Force and the Air National Guard are announcing the availability of the Draft Environmental Impact Statement (EIS) which analyzes proposed actions at the Hardwood Air-to-Surface Gunnery Range located near Finley, Wisconsin. The Draft EIS analyzes actions requesting modifications to the National Airspace System administered by the Federal Aviation Administration and a proposal to expand the land acreage of Hardwood Range and develop additional range facilities.

The Air Force and Air National Guard are also planning to conduct a series of Public Meetings on the following dates and times at the indicated locations:

1. Mauston High School, Mauston, Wisconsin, Tuesday, September 16, 1997, 5:00 - 10:00 PM.
2. Black River Falls Middle School, Black River Falls, Wisconsin, Wednesday, September 17, 1997, 5:00 - 10:00 PM.
3. West Junior High School, Wisconsin Rapids, Wisconsin, Thursday, September 18, 1997, 5:00 - 10:00 PM.

The purpose of these meetings is to present information concerning the proposals and information addressed in the Draft EIS, and to solicit public comments on the Draft EIS.

All interested parties are invited to comment on the Draft EIS. Submission of written comments is encouraged but is not required. Statements, both written and oral, from representatives of government agencies, public interest groups, and the public will be accepted. Written and oral comments will be reviewed in their entirety and given equal consideration. In order to ensure the Air Force and Air National Guard have sufficient time to fully consider public input on issues relating to the analyses contained in the Draft EIS, comments should be submitted to the address below by November 21, 1997. Additional comments will also be accepted and given appropriate consideration as received throughout the environmental impact statement process.

To obtain a copy of the Draft Environmental Impact Statement, or to submit written comment, address correspondence to:

**Air National Guard Readiness Center
Program Manager, Hardwood Range EIS
ANGRC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20762-5157**

Proposed INRMP EA Schedule

November 30, 2000	Review chapters 1 and 2 of the revised draft EA <i>Receive comments on Chaps 1 & 2</i>
December 6, 2000	Produce check copy EA and draft display ads
December 8, 2000	Receive comments on draft display ads
December 11, 2000	Receive comments on check copy EA Turn in display ads to newspapers
December 13, 2000	Notice appears in MH News and Idaho Statesman Begin public comment period
January 12, 2001	End of comment period
January 16, 2001	Receive all comments from ACC and MHAFB (including public/agency comments) on revised draft EA
January 29, 2001	<i>Denver?</i> Produce final EA
January 31, 2001	INRMP implementation MOU finalized

APPENDIX B

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APPENDIX C

GENERAL COORDINATION LIST

General Coordination List

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<p>Abbotsford Public Library 203 Birch P.O. Box 506 Abbotsford, WI 54405-0506</p> <p>Adams County Public Library 101 S. Main St. P.O. Box 850 Adams, WI 53910-0850</p> <p>Altoona Public Library 1303 Lynn Ave. Altoona, WI 54720-0278</p> <p>Arcadia Free Public Library 406 E. Main St. Arcadia, WI 54612-1322</p> <p>Arpin Public Library 8095A Church Rd. Arpin, WI 54410-9607</p> <p>Augusta Memorial Public Library 133 N. Stone St. P.O. Box 474 Augusta, WI 54722-0474</p> <p>Black River Falls Public Library 222 Fillmore Street Black River Falls, WI 54615-1788</p> <p>Blair-Preston Public Library 122 S. Urberg Ave. P.O. Box 165 Blair, WI 54616-0165</p> <p>Campbell Public Library 2219 Bainbridge St. La Crosse, WI 54603-1356</p> <p>Colby Public Library 211 W. Spence St. Colby, WI 54421-0318</p> <p>Dane County Library Service 201 W. Mifflin St. Madison, WI 53703-2597</p> <p>Dorchester Public Library 155 N. Second St. Dorchester, WI 54425-0198</p> <p>Elroy Public Library 501 Second Main St. Elroy, WI 53929-1255</p> <p>Fairchild Public Library 200 Huron St. P.O. Box 149 Fairchild, WI 54741-0149</p>	<p>Fall Creek Public Library 122 E. Lincoln P.O. Box 426 Fall Creek, WI 54742-0426</p> <p>Galesville Public Library 16787 Main St. P.O. Box 697 Galesville, WI 54630-0697</p> <p>Greenwood Public Library 102 N. Main St. Greenwood, WI 54437-0102</p> <p>Hawthorne Public Library 2817 East Washington Madison, WI 53704-5190</p> <p>Hettie Pierce Public Library 24455 Main Street Trempealeau, WI 54661-0383</p> <p>Independence Public Library 23688 Adams St. Independence, WI 54747-0098</p> <p>Indianhead Federated Library System 3301 Golf Road Suite 101 Eau Claire, WI 54701-8017</p> <p>John Bosshard Memorial Library 1720 Henry Johns Blvd. Bangor, WI 54614-8859</p> <p>La Crosse County Library 103 State St., P. Holmen, WI 54636-0220</p> <p>La Crosse Public Library 800 Main St. La Crosse, WI 54601-4122</p> <p>Lakeview Public Library 2845 North Sherman Ave. Madison, WI 53704-3016</p> <p>Loyal Public Library 228 N. Main St. Loyal, WI 54446-0087</p> <p>Madison Public Library 201 W. Mifflin St. Madison, WI 53703-2597</p> <p>Marshfield Public Library 211 E. Second St. Marshfield, WI 54449-3702</p> <p>Mauston Public Library 133 E. State St. Mauston, WI 53948-1344</p> <p>McMillan Memorial Library 490 E. Grand Ave. Wisconsin Rapids, WI 54494-4898</p>	<p>Meadowridge Public Library 5740 Raymond Road Madison, WI 53711-4232</p> <p>Monroe Street Public Library 1705 Monroe Street Madison, WI 53711-2022</p> <p>Necedah Memorial Library 216 S. Main St. P.O. Box 279 Necedah, WI 54646-0279</p> <p>Neillville Public Library 409 Hewett St. Neillville, WI 54456-1923</p> <p>Nekoosa Public Library 225 First St. Nekoosa, WI 54457-1195</p> <p>New Lisbon Memorial Library 115 W. Park St. New Lisbon, WI 53950-1250</p> <p>North Public Library 1552 Kane Street La Crosse, WI 54603-2229</p> <p>Onalaska Public Library 741 Oak Avenue South P.O. Box 248 Onalaska, WI 54650-0248</p> <p>Osseo Public Library City Hall 8th St. Osseo, WI 54758-9999</p> <p>Owen Public Library 414 Central Ave. P.O. Box 130 Owen, WI 54460-0130</p> <p>Pinney Public Library 204 Cottage Grove Road Madison, WI 53716-1105</p> <p>Pittsville Community Library 5291 Third Avenue Pittsville, WI 54466-0911</p> <p>Samson Memorial Library 107 2nd St. P.O. Box 70 Granton, WI 54436-0070</p> <p>Sequoia Public Library 513 South Midvale Boulevard Madison, WI 53711-1422</p> <p>South Central Library System 2317 International Lane Suite 102 Madison, WI 53704-3127</p>
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General Coordination List (continued)

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2222 South Park Street
Madison, WI 53713-1918

Strum Public Library
202 S. 5th Ave.
P.O. Box 35
Strum, WI 54770-0035

Thorp Public Library
401 S. Conway Dr.
P.O. Box 407
Thorp, WI 54771-0407

Vesper Public Library
6553 E. Cameron
Vesper, WI 54489-9999

West Salem Public Library
175 South Leonard Street
West Salem, WI 54669-1620

Whitehall Public Library
36245 Park St.
P.O. Box 36
Whitehall, WI 54773-0036

Winding Rivers Library System
800 Main St.
La Crosse, WI 54601-4122

Withee Public Library
504 Division
P.O. Box 141
Withee, WI 54498-0147

Wonewoc Public Library
305 Center St.
P.O. Box 116
Wonewoc, WI 53968-0116

Media

Adams County Times
Friendship Reporter
116 South Main St.
P.O. Box 99
Adams, WI 53910

Associated Press
1901 Fish Hatchery Rd.
Madison, WI 53713

Augusta Area Times
156 West Lincoln St.
P.O. Box 465
Augusta, WI 54722

Banner Journal
409 East Main St.
Black River Falls, WI 54615

Blair Press
109 North Gilbert St.
P.O. Box 187
Blair, WI 54616

Clark County Press
614 Hewett St.
P.O. Box 149
Neillsville, WI 54456

Elroy Tribune-Keystone
249 Main St.
Elroy, WI 53929

Independence News Wave
201 Washington St.
P.O. Box 47
Independence, WI 54747

Juneau County Star Times
500 La Crosse St.
P.O. Box 220
Mauston, WI 53948

La Crosse Tribune
401 North 3rd St.
Box 865
La Crosse, WI 54601

Leader-Telegram
701 South Farwell St.
P.O. Box 570
Eau Claire, WI 54702

Marshfield News-Herald
111 West 3rd St.
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Milwaukee Journal Sentinel
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Stevens Point Journal
1200 3rd St.
P.O. Box 7
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The Capitol Times
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The Daily Tribune
220 First Ave. South
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Wisconsin Rapids, WI 54494-8090

The Pittsville Record
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WEUX-TV 25
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WFHR-AM 1320
WGLX 103.3
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Wisconsin Rapids, WI 54495-8022

Whitehall Times
1410 Main St.
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Whitehall, WI 54773

Wisconsin State Journal
1901 Fish Hatchery Road
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La Crosse, WI 54608

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Sparta, WI 54656

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Citizens for SWAB
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Dairy Farm
Dairy Farm Families Living in the Proposed Low
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APPENDIX D

KEY FEDERAL STATUTORY AND REGULATORY REQUIREMENTS

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D.1 AIRSPACE MANAGEMENT

The applicable regulations regarding airspace include:

- *Air Force Instruction (AFI) 11-206* prescribes general flight rules which govern the operation of aircraft flown by the U.S. Air Force (USAF), to include the Air National Guard (ANG).
- *AFI 13-201* defines types and uses of military training airspace and other USAF airspace management techniques.
- *AFI 11-F16* defines flying training requirements for F-16 pilots.
- *FAA Order 7110.65* prescribes air traffic control procedures and phraseology for use by personnel providing air traffic control services in the United States.
- *FAA Order 7610.4* specifies procedures for air traffic control planning, coordination, and services during defense activities and special military operations conducted in airspace controlled by or under the jurisdiction of the FAA.
- *FAA Order 7400.2D* prescribes policy, criteria, and procedures applicable to rulemaking and nonrulemaking actions associated with airspace allocation and utilization, obstruction evaluation and marking, airport airspace analyses, and the establishment of air navigation aids.
- *FAA Order 7400.6* provides a compilation of regulations containing current airspace designations and pending amendments to those designations that are issued by the FAA. This order is published annually for the benefit of the public, since airspace designations are not carried in the Code of Federal Regulations or the Federal Aviation Regulations.
- *Federal Aviation Act of 1958* created the Federal Aviation Administration (FAA) and charged the FAA Administrator with ensuring the safety of aircraft and the efficient use of the National Airspace System within the jurisdiction of the United States.
- *Federal Aviation Regulation Part 71* delineates the designation of Federal airways, area low routes, controlled airspace, and navigational reporting points.
- *Federal Aviation Regulation Part 73* defines special use airspace and prescribes the requirements of the use of that airspace.
- *Federal Aviation Regulation Part 91* describes the rules governing the operation of aircraft within the United States.

D.2 SAFETY

The Air National Guard operates under an extensive set of regulations and procedures aimed at ensuring the safety of the public as well as Air National Guard personnel, facilities, and equipment. The regulations, procedures, plans, and agreements most pertinent to the proposed action include:

- *AFI 13-212, Vols 1 and 2*, establishes procedures for the planning, construction, design, operation, and maintenance of weapons ranges. It defines criteria for target placement, weapons safety footprints, and buffer zones as well as safety procedures involving aircraft or ordnance malfunctions.
- *AFI 91-301* contains Air Force occupational safety, fire prevention, and health regulations governing a wide range of activities and procedures associated with safety in the workplace.
- *Department of Defense Flight Information Publication (FLIP)* indicates locations of potential hazards (e.g., bird aggregations, obstructions) and noise sensitive locations under military airspace and defines horizontal and/or vertical avoidance measures. The FLIP is updated monthly to present current conditions.

D.3 NOISE

The applicable regulations and procedures regarding noise include:

- *Federal Interagency Committee Guidelines for Considering Noise in Land Use Planning and Control of 1980* reflects the concurrence on the use of the L_{dn} metric by all Federal agencies.
- *Federal Interagency Committee Review of Selected Noise Analysis Issues of 1992* reflects a reaffirmation on the use of the L_{dn} metric by all Federal agencies.
- *Air Force Manual 19-10* describes tools to aid in the development of acceptable noise environments.
- *Executive Order 12088* requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution, including noise pollution, with respect to Federal facilities and activities under the control of the agency.

D.4 LAND USE

National and state resource management plans, local plans and zoning regulations, and other policies that pertain to land use, provide a guideline for development in these areas. Other pertinent Federal laws include:

- *National Wild and Scenic Rivers Act of 1968* defines wild, scenic, and recreational rivers, designates a river classification, and establishes limits to development on shoreland areas.

- *Wilderness Act of 1964* requires a wilderness review of roadless areas to determine suitability for designation by Congress as a Wilderness Area.
- *Department of Transportation Act of 1966* prohibits the Secretary of Transportation from approving a project which requires the use or "taking" of any publicly owned land from a public park unless there is no feasible alternative to the use of the land and plans to minimize harm to the park are considered.

D.5 VISUAL RESOURCES/AESTHETICS

Regulations, plans, and policies affecting aesthetics include Federal statutes, regulations and procedures that apply to public lands and federally protected areas, state and local scenic highway designations, and local plans and policies that regulate aesthetics. These include:

- *Forest Management Act* provides direction to the US Forest Service to develop a visual management system to inventory and evaluate scenic resources, and to establish visual quality objectives.
- *Forest Service Visual Management System* requires that development on Forest Service lands be done in conformity with applicable forest land-management plans which describe visual quality objectives for areas under consideration.
- *National Wild and Scenic Rivers Act of 1968* designates wild, scenic, and recreational rivers and establishes limits to management activities. Regulated corridors average 1/4 miles on each side of the river.
- *Wilderness Act of 1964* requires a wilderness review of roadless areas to determine suitability for designation by Congress as Wilderness Area.

These regulations and guidelines provide a basis for evaluating the compatibility of components or structures in an area. However, no such regulatory foundation exists for evaluating visual impacts from overflights. The FAA has not established specific regulations with respect to overflights of environmentally sensitive areas. An interagency cooperation agreement between the National Park Service, Fish and Wildlife Service, Bureau of Land Management, and FAA suggests that aircraft remain above 2,000 feet AGL when overflying wilderness areas.

D.6 BIOLOGICAL RESOURCES

The applicable laws and regulations regarding biological resources include:

- *The Clean Water Act* requires a National Pollutant Discharge Elimination System (NPDES) permit for all discharges to reduce pollution that could affect any form of life. Section 404 of this act regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers.
- *Endangered Species Act of 1973* as amended, protects proposed and listed threatened or endangered species. Formal consultation with the US Fish and Wildlife Service is required under Section 7 of the act for Federal projects

and all other projects and all other projects that require Federal permits where such actions could directly or indirectly affect any proposed or listed species.

- *Executive Order 12088* requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.
- *Migratory Bird Treaty Act of 1972* protects migratory waterfowl and all seabirds by limiting the transportation, importation, killing, or possession of those birds.

D.7 CULTURAL RESOURCES

Numerous Federal laws and regulations require Federal agencies such as the Air National Guard to consider the effects of a proposed action on cultural resources. These laws and regulations stipulate a process of compliance, define the responsibilities of the agency proposing the action, and prescribe the relationship among other involved agencies such as state historical commissions. The most pertinent laws and regulations concerning the protection and treatment of cultural resources include:

- *National Historic Preservation Act of 1966* provides a broad base for the implementation of preservation goals by establishing the National Register of Historic Places (National Register) and the Advisory Council on Historic Preservation (Advisory Council). Section 106 of this act requires that Federal agencies take into account the effect of an action or undertaking on cultural resources included in or eligible for inclusion in the National Register.
- *36 CFR 60* defines a set of criteria for evaluating the significance of resources and their eligibility to the National Register.
- *36 CFR 800* establishes an explicit set of procedures for Federal agencies to meet their obligations under the National Historic Preservation Act and Executive Order 11593. The regulations operationalize the requirements of the Section 106 process, establishing procedures for determining the eligibility of a resource and for defining possible adverse effects.
- *American Indian Religious Freedom Act* states that it is the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise traditional religions. These rights include, but are not limited to, access to traditional sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.
- *Archaeological Resources Protection Act of 1979* ensures the protection of archaeological resources on Federal lands. This act defines civil and criminal penalties for illegally obtaining or affecting archaeological resources on Federal or Native American lands.
- *Executive Order 11593* directs all Federal land-holding agencies to identify cultural resources, nominate qualifying resources to the National Register, and agencies to avoid damaging resources that might be eligible for the National Register.

D.8 AIR RESOURCES

The applicable laws and regulations regarding air resources include:

- *The Clean Air Act* states that a national goal is to prevent any further impairment of visibility within federally mandated Class I areas such as National Parks and Wilderness Areas from manmade sources of air pollution. Visibility impairment is defined as (1) a reduction in regional visual range or (2) atmospheric discoloration or plume blight from exhaust effluents. Criteria to determine significant impacts on visibility within Class I areas exist for stationary emission sources, but do not pertain to mobile sources since they are generally exempt from permit review by regulatory agencies.
- Title 40 of the Code of Federal Regulations (CFR) parts 50 and 51, reflecting the Clean Air Act Amendments of 1977 and 1990, dictates that the NAAQS must be maintained nationwide. State and local agencies are delegated authority to enforce the NAAQS and to establish air quality standards and regulations of their own. The adopted state standards and regulations must be at least as restrictive as the Federal requirements.

D.9 SOCIOECONOMICS

NEPA requires the consideration of socioeconomic factors to the extent that they affect "the quality of the human environment." The concept of impacts to the human environment is addressed in 40 CFR 1508.14, and recognized by the Air Force in AFI 32-7061.

D.10 WATER RESOURCES

Statutes, regulations, and executive orders enacted to protect water resources form the basis for policy guidelines and management practices relating to water resources. They include:

- *The Clean Water Act* requires any point source that discharges waste into waters of the United States to obtain a National Pollution Discharge Elimination System (NPDES) permit. Section 404 of this act regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers prior to such activities.
- *Executive Order 12088* requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.
- *Safe Drinking Water Act* requires the Environmental Protection Agency (EPA) to establish a program which provides for the safety of the nation's drinking water.
- *National Wild and Scenic Rivers Act of 1968* protects natural resources designated as wild and scenic river systems.

D.11 HAZARDOUS MATERIALS

Federal and state laws, policies, and regulations apply to activities involving hazardous materials. This regulatory framework provides the guidelines and management practices to minimize adverse impacts resulting from hazardous materials utilization. They include:

- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, and the Superfund Amendments and Reauthorization Act (SARA) of 1986* provide liability and compensation for cleanup and emergency response from hazardous substances released and discharged into the environment and the clean up of hazardous disposal sites.
- *Hazardous Materials Transportation Act (HMTA) of 1975* establishes criteria for shippers and carriers that manage hazardous materials and includes training and qualifications of persons handling hazardous materials.
- *Resource Conservation and Recovery Act (RCRA) of 1976* regulates storage, transportation treatment, and disposal of hazardous waste that could adversely affect the environment.
- *Solid Waste Disposal Act (SWDA) and Amendments of 1980* amends RCRA with additional regulation of energy and materials conservation and the establishment of a National Advisory Council.

D.12 ENVIRONMENTAL EQUITY

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to address and consider the impacts on environmental and human health conditions in minority and low income communities from Federal actions. The general purposes of this Executive Order are:

- To focus the attention of Federal agencies on human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice
- To foster non-discrimination in Federal programs that substantially affect human health of the environment
- To give minority communities and low-income communities greater opportunities for public participation in, and access to public information on, matters relating to human health and the environment.

APPENDIX E

CURRENT OPERATIONAL TRAINING REQUIREMENTS ASSOCIATED WITH THE PROPOSED ACTION

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CURRENT OPERATIONAL TRAINING REQUIREMENTS

E.1 AIRCRAFT CHARACTERISTICS

Because of its central location and diverse capabilities, 15 or more different types of aircraft use the Hardwood Range and its associated airspace. United States Air Force (USAF) aircraft such as the A-10, B-1, B-2, B-52, C-26, C-130, F-15, F-16, F-117, and the LR-36; and United States Navy aircraft such as the A-6 and F-18 are representative of the types of aircraft flying on the Hardwood Range and within the associated airspace.

The A-10 aircraft was designed for two primary purposes: provide close air support for friendly forces and immobilize enemy armor with its 30 millimeter (mm) gatling gun. The aircraft can carry laser guided and free-fall air-to-surface ordnance in addition to its armor piercing gatling gun.

The B-1 aircraft is a strategic bomber designed for deep penetration into enemy territory. The B-1 has a low-altitude "dash" capability to evade enemy threats at high speed. The aircraft is capable of carrying nuclear and non-nuclear (conventional) free-fall air-to-surface ordnance.

The B-2 aircraft is a stealth technology bomber. Distinctive in its flying wing configuration, the aircraft is capable of flying at high or low-altitudes with a low probability of being detected by conventional radars. The aircraft carries an internal load of free-fall air-to-surface ordnance.

The B-52 aircraft is the oldest operational bomber in the USAF fleet with over 30 years of operational service. The aircraft can carry internally and externally a wide range of free-fall air-to-surface ordnance while operating at very high or very low-altitudes.

The C-26 twin turboprop aircraft is used as a mission support aircraft, carrying 12-15 passengers and/or cargo.

The C-130 turboprop aircraft is the USAF's workhorse for inter- and intra-theater airlift. This versatile aircraft is designed to airdrop cargo and/or troops to forward operating locations in all weather conditions.

The F-15 aircraft is designed to achieve and maintain air superiority using an advanced radar system capable of detecting adversarial aircraft at approximately 100 or more miles away, air-to-air armament, and superior maneuvering capability. The F-15 is capable of flying as low as 100 feet AGL and as high as 60,000 feet MSL in performing its air superiority mission.

The F-15E aircraft, a derivative of the F-15C/D, is designed for air-to-surface ordnance delivery and defense suppression. Designed with an enhanced radar, the aircraft is capable of navigating at low-altitude at night and in all weather conditions to strike targets deep into enemy territory. The aircraft carries a wide range of free-fall and laser guided air-to-surface ordnance.

The F-16 aircraft is equipped with a computerized weapons delivery system. It also has a self-defense and offensive air-to-air combat capability against both fighter and bomber aircraft. It is equipped with a long range air-to-air radar capable of acquiring enemy aircraft at distances of up to 80 NM; missiles can be launched at ranges of 20 NM or more. The F-16 is capable of flying at altitudes as low as 100 feet AGL to evade enemy radar and weapons system detection while en route to and from target areas, and up to FL 500 in order to intercept high altitude enemy aircraft and to avoid low-altitude threats.

The F-117 aircraft is a stealth technology fighter. The aircraft is designed to fly high or low-altitude with internally carried air-to-surface ordnance while having a low probability of being detected by radar.

The LR-36 is a twin turboprop aircraft used for mission support tasks, carrying passengers and/or cargo, and for electronic countermeasures training for fighter aircrews.

The PA-200 Tornado is a multirole supersonic combat aircraft. Its capabilities and missions include low-altitude all-weather close air support, and battlefield interdiction, as well as air defense, air superiority, and reconnaissance.

The Navy's A-6 aircraft is a multi-purpose aircraft designed for suppression of enemy defenses through electronic counter measures and interdiction with free-fall ordnance. The aircraft's bulbous nose and a curved refueling probe just forward of the cockpit are unique design features of this aircraft.

The F-18 aircraft has a computerized weapons delivery system and an advanced radar system that gives the aircraft an air-to-air and air-to-surface weapons delivery capability. It is equipped with a long range air-to-air radar capable of acquiring enemy aircraft at distances of up to 80 NM; missiles can be launched at ranges of 20 NM or more. Its mission and capabilities are similar to the F-16. The F-18 is capable of flying at altitudes as low as 100 feet AGL to evade enemy radar and weapons system detection while en route to and from target areas, and up to 50,000 feet MSL to intercept high altitude enemy aircraft and to avoid low-altitude threats.

Several types of rotary wing aircraft (i.e., helicopters such as the AH-1 and UH-1) could also operate on the range. These aircraft fly administrative support missions (e.g., explosive ordnance disposal) in addition to providing airborne support for simulated ground forces.

E.2 TRAINING ACTIVITIES ASSOCIATED WITH THE PROPOSED ACTION

The following subsections describe the various types of training required of military aircrews and identify the types of military airspace within which this training should occur. Also addressed are airspace configuration requirements associated with the training.

E.2.1 Typical Training Missions on Air-to-Surface Ranges

To simulate the delivery of live air-to-surface weapons, aircrews fly missions to training ranges where they practice dropping training munitions. The USAF mandates this training to keep aircrews combat ready. To maintain combat ready

proficiency, simulated tactical weapons delivery missions are flown frequently by each pilot in the unit.

At the Hardwood Range, training events simulate the delivery of MK82 (500-pound bomb) and MK84 (2,000-pound bomb) weapons in both low drag and high drag (air inflatable retarder) configurations. Simulating the presence of different ground threat systems, aircrews practice weapon deliveries from several altitudes and dive angles. Release altitudes range from 250 feet AGL to 15,000 feet AGL. No full-scale, explosive munitions are used on the range. A 25-pound practice bomb, the BDU-33, is used to simulate the full scale munitions. The BDU-33 contains a white smoke charge that ignites on impact to aid in scoring the accuracy of the weapons delivery. Normally, aircraft on simulated weapons delivery missions are loaded with six BDU-33s, allowing several events to be practiced and scored on each mission.

Aircraft are also loaded with target practice ammunition with inert projectiles for strafe practice. Aircrews fire the ammunition on two practice strafe passes on each mission. The following scenarios describe the typical missions that would be flown on Hardwood Range.

E.2.1.1 Scenario 1—Basic Weapons Delivery

At the conclusion of low-altitude training, a flight would enter the basic weapons delivery pattern. The basic delivery pattern consists of a rectangular ground track with a final delivery leg, off-target climbing turn to downwind, and a base leg leading to the final delivery leg for subsequent deliveries. A flight of four aircraft can practice weapons delivery during the same range period. They would space themselves about 15 to 20 seconds apart around the pattern.

E.2.1.2 Scenario 2—Low to Medium Altitude Tactical Weapons Delivery

A flight of four aircraft would proceed to Hardwood Range at low altitude along an MTR or at medium to high altitude (above 5,000 feet AGL). The aircraft would space themselves less than one minute apart. The training objective is to strike the target from a direction unfamiliar to the pilot. This is known as a first run attack. Before entering R-6904, the flight would fly over a known point on the ground approximately 10 to 12 NM from the target. From that point, the flight would fly a precise ground track to a point approximately 5 NM from the target. From that point, one or more aircraft would climb to an appropriate altitude (varying up to FL 250) to begin a weapons delivery from a 10 to 45-degree dive angle. The aircraft would release their ordnance at an altitude that would keep them above simulated small arms weapons firing and simulated fragmentation pattern. After the initial delivery, the flight would continue to practice tactical weapon deliveries on Hardwood Range. At the conclusion of the range mission, the four aircraft would egress from the target area and return to Volk Field or their home station at low, medium, or high altitude.

E.2.1.3 Scenario 3—High Altitude Release Bomb

A flight of four aircraft would proceed to Hardwood Range occasionally at low altitude but normally at medium to high altitude (above 5,000 feet AGL). The aircraft would space themselves about 30 to 40 seconds apart. The training objective is to release ordnance on target and to stay above 10,000 feet AGL. Each aircraft would

proceed to the target area and climb, if necessary, to between FL 200 and FL 300 to visually acquire the target. Once the target is seen, the aircraft would maneuver to a position from which a 30 to 40-degree dive angle can be achieved. The aircraft would then establish the desired dive angle and release the ordnance at an altitude that would ensure the aircraft remains above 10,000 feet AGL. After the initial delivery, the flight would continue to practice weapon deliveries on Hardwood Range. At the conclusion of the range mission, the four aircraft would egress from the target area and return to Volk Field or their home station at low, medium, or high altitude.

E.2.2 Typical Training Missions on Drop Zones and Landing Zones

Drop zones are designated areas that are used by military aircrews to conduct airdrop cargo and personnel operations. Landing zones are often associated with drop zones and are designed to develop aircrew proficiency through realistic short field landings. A drop zone and a landing zone are required to provide airlift aircraft, such as the C-130, a designated area to practice insertions/extractions of airlift cargo. Several types of airdrop training missions are associated with military drop zones, including Container Delivery System (CDS), Standard Airdrop Training Bundle (SATB), heavy equipment, and personnel airdrops.

E.2.2.1 Container Delivery System Airdrops

CDS airdrops are single or multiple A-22 type containers that weigh from 500 to 2,200 pounds and are gravity released from the rear of the aircraft by cutting a restraint and keeping the nose of aircraft upward. The CDS airdrops occur at approximately 400 feet AGL and are usually water-barrel drops weighing from 900 to 1,000 pounds. The CDS bundle would contain barrels of water that could be drained at the drop zone site and easily transported back to their original location. Occasionally, actual CDS containers of food and water may be dropped. In this case, the CDS containers may weigh more or less than the normal amount but would not exceed the 2,200 pound limit.

E.2.2.2 Standard Airdrop Training Bundle Airdrops

SATB airdrops are 15-pound sand bags that are released to simulate personnel, equipment, or door bundle airdrops. The SATB airdrops occur at a range of 400 to 1,000 feet AGL.

E.2.2.3 Heavy Equipment Airdrops

Heavy equipment drops vary in weight from 4,500 pounds to 40,000 pounds. They are extracted from the rear of the aircraft by parachute, normally at 600 feet AGL. The heavy equipment dropped ranges from Armored Personnel Carriers to light artillery.

E.2.2.4 Personnel Airdrops

C-130 aircraft are tasked for wartime and peacetime personnel transport operations. C-130 aircraft transport personnel such as paratroopers into designated areas (i.e., insertion operations). This type of airlift support could be for guerrilla

assault warfare in wartime or humanitarian relief during peacetime or emergency operations.

E.2.2.5 Landing Zone/Personnel Extraction Operations

Short-field landings typically consist of an approach to an unimproved landing surface (i.e., a dirt runway) to simulate a high-threat situation. The landing is terminated with a minimum ground roll. Short-field landings are practiced on landing zones. These missions deliver equipment or personnel with a minimum time on the ground. C-130 aircraft also extract personnel from designated areas in extraction missions that range from medical support to combat troop operations.

E.2.2.6 Flight and Ground Operations

The lowest altitude for DZ approaches is usually 400 feet AGL. Most flights enter and leave DZs above this 400-foot AGL minimum altitude. Aircraft remain at the lowest approach altitude during an airdrop for an average duration of one minute, covering a distance of approximately two miles. Utilization is usually restricted to visual only drops. Within visual DZ parameters, both the pilot and the navigator must concur about the drop point. The crew would be restricted from actuating a drop when site visibility is questionable.

Ground operations associated with airdrop training consist of a drop zone support team of two to eight personnel who identify the drop location for the aircrews and recover drop materials. For daytime operations, the support team would use a raised angle marker (RAM), smoke grenades, mirrors, or any combination of these three to mark the DZ. A RAM is a portable fabric marker, erected similar to a tent, and made from highly visible fabric. Smoke grenades are used to aid visibility and are placed in non-flammable containers to prevent ignition of local combustibles, such as grass or weeds. Signaling mirrors may also be used. For operations after sunset, small battery operated lights are used to form a block letter on the ground, and signaling lights similar to spot lights are used to direct aircraft to the drop zone.

Equipment required to remove the airdrop training loads is determined by the type of airdrop being conducted. For door bundle and SATB airdrops, only two personnel and one truck are required to recover the sand bags or containers released from the aircraft. For actual CDS drops, four to eight personnel, a fork lift, and a flat bed truck are required to recover the containers. In addition, a designated drop zone truck, equipped with radios for communication with aircraft as well as with the command post, fire extinguishers, smoke grenade containers, and an emergency medical kit are required.

E.2.3 Typical Training Missions In MOAs

E.2.3.1 Low-Altitude Surface Attack Tactics

Scenario 1 - Simulated Weapons Delivery

This scenario consists of two or more attack aircraft performing low-altitude navigation on an MTR leading into a MOA or restricted area. The aircraft simulate a

variety of weapons deliveries against a target. Targets are stationary, strategic objects, including bridges and railroad yards. An attack includes passes by each aircraft within the flight, time sequenced over the target to provide safe separation during a simulated weapon delivery. If the surface attack tactics are practiced within a weapons delivery range, such as Hardwood Range, practice munitions can be expended and delivery accuracy analyzed.

Precise timing during the ingress to the target is practiced, as is target acquisition from a level approach between 500 feet AGL and 1,000 feet AGL. Aircraft flying at this altitude are simulating a high-threat situation. At a preplanned point, the aircraft begins a rapid climb to 3,000 to 5,000 feet AGL, and occasionally up to 12,000 feet AGL, to visually acquire the target. From the maximum altitude, a simulated low angle weapons delivery between 10 to 20 degrees, or a high angle delivery between 30 to 45 degrees of dive angle, is made.

Egress tactics from the target area are also practiced. Aircrews practice returning to low-altitude as quickly and safely as possible while regaining their desired low-altitude tactical formation. Surface attack tactics can be enhanced by the addition of a threat aircraft attempting to disrupt or negate an attack.

Scenario 2 - Close Air Support

This scenario normally consists of two aircraft performing low-altitude navigation on an MTR leading into a MOA or restricted area. This mission is flown to support ground-based U.S. Army or Marine forces in close proximity to enemy forces. Approaching the MOA or restricted area, the aircraft establish radio contact with a Forward Air Controller (FAC) who gives the flight a situation briefing. The situation briefing includes the location of friendly and enemy troops, the ground commander's objectives, and the location of any known surface-to-air threats. The FAC will also restrict the flight's operations, as necessary, to ensure the safety of friendly troops. The close air support aircraft simulate carrying ordnance appropriate for supporting the ground commander's objectives.

The close air support aircraft enter the simulated target area in one of two ways. One way is a high altitude entry from approximately 5,000 feet AGL to orient themselves based on the FAC's situation briefing. After establishing the exact location of friendly troops, the close air support flight will simulate delivering ordnance as the FAC directs. The FAC, who is in constant radio contact with the ground commander, will designate the impact point for each ordnance delivery based on the effectiveness of each weapons delivery. After expending the simulated ordnance, the flight departs the target area at medium or high altitude.

A second entry is from a pop-up maneuver, simulating a high ground threat situation. This type entry begins with the aircraft at low-altitude (approximately 500 feet AGL) to avoid detection by enemy radar and visual acquisition. At a preplanned point, the aircraft begins a rapid climb to 3,000 to 5,000 feet AGL, and occasionally up to 12,000 feet AGL, to visually acquire the target. From the maximum or apex altitude, a simulated low angle weapons delivery between 10 to 20 degrees is made. After expending the simulated ordnance, the flight departs the target area at low, medium, or high altitude.

E.2.3.2 Air Combat Training

Air combat training involves at least two and usually four aircraft practicing the maneuvers and fundamentals of offensive and defensive aerial attack. Pilots learn the capabilities of threat aircraft and weapons systems while employing tactics to exploit an adversary's weaknesses. Two or more aircraft may operate as a team to enhance detection of adversary aircraft, defeat attacks, and maneuver as a mutually supportive element to negate and destroy the adversary forces. Aircraft simulate air-to-air ordnance launches during such training.

Airspace used for air combat training must be large enough to permit realistic offensive and defensive tactics. If the area is too small, pilots can be distracted by the need to constantly monitor their proximity to airspace boundaries. Additionally, aircrews need to exercise the onboard radar to its maximum extent for realistic training. The *USAF Airspace Master Plan* suggests the area should be 60 NM wide and 70 NM long, extending vertically to FL 500.

Air combat training is flown above 5,000 feet AGL throughout the altitude structure available in the training airspace. A typical scenario involves opposing forces, with one group defending an area while the other group attempts to pass through the defended area or engage the defensive group. The goal of air combat training is to refine pilot skills in radar and visual lookout as well as offensive and defensive employment of tactics and weapons. Basic fighter maneuvers, air combat maneuvering, and air combat tactics training also refine air-to-air skills of military pilots.

Basic fighter maneuvering is the fundamental training of all air-to-air flight maneuvering. This training is normally conducted with two similar aircraft to practice individual offensive and defensive maneuvering against a single adversary. Offensive and defensive aircraft maneuvering and weapons employment are emphasized on these missions. Most engagements rely on visually identifying an adversary as opposed to radar detection.

Air combat maneuvering training usually involves three similar aircraft. This training emphasizes intra-flight coordination, survival tactics, and two-ship maneuvering against a single adversary. The training scenarios vary by having the adversary either within visual range or beyond visual range dependent on the specific training objectives. The use of on-board radar is emphasized.

Air combat tactics training requires three or four aircraft. This scenario involves designating friendly and enemy forces, which separate as far as possible in the maneuvering airspace to begin tactics training. The training begins with opposing forces coming toward each other within specified altitude bands to ensure safe separation. The purpose of this training is team work, targeting and sorting by radar, and intercept tactics to enhance survival. If two different type aircraft train together, the training is called dissimilar air combat tactics. On-board detection systems are utilized, such as radar and threat warning receivers.

E.2.3.3 Air Combat Maneuvering Instrumentation Training

The Air Combat Maneuvering Instrumentation (ACMI) system is the most powerful, state-of-the-art training aid for combat aircrews. The ACMI provides enhanced safety for aircrews training in aerial combat, air-to-ground weapons delivery, surface-to-air defenses, and electronic warfare. The ACMI also provides real-time

monitoring and recording of aircrew training activities. The system has a no-drop weapons scoring capability for fighter aircraft and can emit a mobile electronic threat signal against all aircraft. The ACMI system is composed of four major components:

- The Airborne Instrumentation System (AIS)
- The Tracking Instrumentation System (TIS)
- The Control and Computation System (CCS)
- The Display and Debriefing System (DDS).

The AIS is an airborne externally or internally mounted pod. The AIS transmits essential aircraft data, such as altitude, airspeed, velocity, gravitational forces, and weapons information to the TIS throughout an entire mission. The TIS is a network of antennas that communicate data to and from each aircraft. The TIS is the data link between the AIS and the CCS. The CCS is the central control and computation system for the ACMI. The CCS calculates aircraft position and weapons simulations and relays the data to the DDS. The DDS provides aircrews the means for real-time control and debriefing, using three-dimensional graphics and mission data. The ACMI's sophisticated instrumentation, strict training rules and safety regulations, combine to make this training the safest available.

E.2.3.4 Low-Altitude Air-to-Air Training

Low-altitude air-to-air training normally involves two to four aircraft practicing the maneuvers and fundamentals of offensive and defensive aerial attack. This mission is usually flown in conjunction with other training missions such as surface attack tactics or low-altitude intercepts.

Low-altitude air-to-air training is conducted below 5,000 feet AGL. A typical scenario involves designating one or more aircraft as interceptor, tasked to locate and intercept a low-altitude flight of aircraft en route to a target. Participants are at minimum altitude for very short periods of time. The ingressing aircraft must detect and react appropriately to negate the interceptor's attack and proceed to the target area. Maneuvering is restricted because of the aircraft's proximity to the ground. Training is optimized when the interceptors are dissimilar (different type) aircraft to differentiate friend/foe roles. The goal of low-altitude air-to-air training is to refine pilot skills in radar and visual lookout and maneuvering required at low-altitude to negate an attack. Low-altitude air-to-air training also provides valuable training for the interceptor in low-altitude intercept tactics and techniques. Low-altitude air-to-air training is most realistic when conducted over land because pilots are required to be constantly aware of changing terrain elevation and obstacles. This training also increases a pilot's depth perception acuity.

Airspace used for low-altitude air-to-air training must be large enough to permit realistic offensive and defensive tactics. If the area is too small, pilots can be distracted by the need to constantly monitor their proximity to airspace boundaries. In addition, smaller airspace concentrates noise over any one location. For low-altitude air-to-air training, a MOA for orbiting defensive aircraft combined with one or more MTRs for the ingressing/egressing aircraft provides the most realistic training

opportunity. The *USAF Airspace Master Plan* suggests the optimum airspace for this type training would be 70 NM long and 60 NM wide below 5,000 feet AGL.

E.2.3.5 Low-Altitude Step-Down Training

Fighter aircrews must train to fly at very low-altitude to allow for safe, survivable, and effective tactical navigation and weapons delivery. *Step-Down Training* is used to practice aircraft maneuvers at an altitude at which a pilot is comfortable, and gradually develop proficiency skills at low-altitudes. Pilots use terrain features to avoid detection by airborne and land-based radar systems. They must learn to navigate at low-altitude while maintaining tactical formation to provide maximum self defense capability. Hard turns, along with climbs and dives, need to be practiced frequently to maintain low-altitude maneuvering proficiency.

E.2.3.6 Intercept Training

Radar-equipped fighter aircraft can train at altitudes as low as 100 feet AGL and up to 50,000 feet MSL to detect, intercept, identify, and if necessary, destroy hostile aircraft. In a typical training scenario, the interceptor(s) and target(s) are positioned beyond the expected detection capability of the interceptor's on-board radar. The target aircraft attempts to penetrate the area protected by the interceptor. The interceptor, in many cases with the aid of ground-based or airborne radars, attempts to detect the target, maneuver to identify the aircraft, and reach a position from which armament could be successfully employed. Airspace for intercept training should have at least one dimension large enough to position interceptor and target beyond the radar detection range of each aircraft. During low-altitude intercept training, participants operate at minimum altitude for very short periods of time. The *USAF Airspace Master Plan* suggests the optimum airspace for this type training would be 70 NM long and 60 NM wide, extending vertically up to FL 500.

E.2.4 Frequency of Training Operations

Units that fly training missions on Hardwood Range typically fly Tuesday through Friday, with an expanded weekend training program once each month. A typical flight schedule for an ANG unit would consist of up to 16 sorties per day Tuesday through Friday. Flying units conduct monthly Unit Training Assemblies on weekends during which as many as 36 sorties would be flown on Saturday and 12 on Sunday. Once every three months, the unit typically flies as many as 12 additional sorties on Sunday.

Units deployed to Volk Field or that are completing an Operational Readiness Inspection (ORI) would typically fly 24 sorties per day for 3 to 5 days. Approximately 8 units are deployed to Volk Field for ORIs each year.

APPENDIX F

NOISE ANALYSIS

APPENDIX F

AIRCRAFT NOISE ANALYSIS

F.1 NOISE

F.1.1 General

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with aircraft operations. Aircraft are not the only sources of noise in an urban or rural surrounding, where interstate and local vehicular traffic, rail, industrial, and neighborhood sources also intrude on the everyday quality of life. Nevertheless, aircraft are readily identifiable to those affected by their noise and are typically singled out for special attention and criticism. Consequently, aircraft noise problems often dominate analyses of environmental impacts.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Whether that sound is interpreted as pleasant (for example, music) or unpleasant (for example, automobile horn noise) depends largely on the listener's current activity, past experience, and attitude toward the source of that sound. It is often true that one person's music is another person's noise.

The measurement and human perception of sound involves two basic physical characteristics – intensity and frequency. Intensity is a measure of the acoustic energy of the sound vibrations and is expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

The loudest sounds that can be detected comfortably by the human ear have intensities that are 1,000,000,000,000 times larger than those of sounds which can just be detected. Because of this vast range, any attempt to represent the intensity of sound using a linear scale becomes very unwieldy. As a result, a logarithmic unit known as the decibel (abbreviated dB) is used to represent the intensity of a sound. Such a representation is called a sound level.

A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

$$\begin{aligned}60 \text{ dB} + 60 \text{ dB} &= 63 \text{ dB, and} \\80 \text{ dB} + 80 \text{ dB} &= 83 \text{ dB.}\end{aligned}$$

The total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two. For example:

$$60.0 \text{ dB} + 70.0 \text{ dB} = 70.4 \text{ dB.}$$

Because the addition of sound levels behaves differently than that of ordinary numbers, such addition is often referred to as "decibel addition" or "energy addition". The latter term arises from the fact that what we are really doing when we add decibel values is first converting each decibel value to its corresponding acoustic energy, then adding the energies using the normal rules of addition, and finally converting the total energy back to its decibel equivalent.

An important facet of decibel addition arises later when the concept of time-average sound levels is introduced to explain Day-Night Average Sound Level. Because of the logarithmic units, the time-average sound level is dominated by the louder levels that occur during the averaging period. As a simple example, consider a sound level that is 100 dB and lasts for 30 seconds, followed by a sound level of 50 dB that also lasts for 30 seconds. The time-average sound level over the total 60-second period is 97 dB, not 75 dB.

The minimum change in the time-averaged sound level of individual events that an average human ear can detect is about 3 dB. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, and this relation holds true for loud sounds and for quieter sounds. A decrease in sound level of 10 dB actually represents a 90 percent decrease in sound intensity but only a 50 percent decrease in perceived loudness because of the nonlinear response of the human ear (similar to most human senses).

Sound frequency is measured in terms of cycles per second (cps), or hertz (Hz), which is the preferred scientific unit for cps. The normal human ear can detect sounds which range in frequency from about 20 Hz to about 15,000 Hz. All sounds in this wide range of frequencies, however, are not heard equally well by the human ear, which is most sensitive to frequencies in the 1000 Hz to 4000 Hz range. In measuring community noise, this frequency dependence is taken into account by adjusting the very high and very low frequencies to approximate the human ear's lower sensitivity to those frequencies. This is called "A-weighting" and is commonly used in measurements of community environmental noise.

Sound levels measured using A-weighting are most properly called A-weighted sound levels while sound levels measured without any frequency weighting are most properly called sound levels. However, since most environmental impact analysis documents deal only with A-weighted sound levels, the adjective "A-weighted" is often omitted, and A-weighted sound levels are referred to simply as sound levels. In some instances, the author will indicate that the levels have been A-weighted by using the abbreviation dBA or dB(A), rather than the abbreviation dB, for decibel. As long as the use of A-weighting is understood to be used, there is no difference implied by the terms "sound level" and "A-weighted sound level" or by the units dB, dBA, and dB(A). In this document, all sound levels are A-weighted sound levels and the adjective "A-weighted" has been omitted.

Sound levels do not represent instantaneous measurements but rather averages over short periods of time. Two measurement time periods are most common — 1 second and one-eighth of a second. A measured sound level averaged over 1 second is called a slow response sound level; a level averaged over one-eighth of a second is called a fast response sound level. Most environmental noise studies use slow response measurements, and the adjective "slow response" is usually omitted. It is easy to understand why the proper descriptor "slow response A-weighted sound level" is usually shortened to "sound level" in environmental impact analysis documents.

F.1.2 Noise Metrics

A "metric" is defined as something "of, involving, or used in measurement." As used in environmental noise analyses, a metric refers to the unit or quantity which quantitatively measures the effect of noise on the environment. Noise studies have typically involved a confusing proliferation of noise metrics as individual researchers have attempted to understand and represent the effects of noise. As a result, past literature describing environmental noise or environmental noise abatement has included many different metrics. Recently, however, various Federal agencies involved in environmental noise mitigation have agreed on common metrics for environmental impact analysis documents, and both the Department of Defense and the Federal Aviation Administration have specified those which should be used for federal aviation noise assessments. These metrics are as follows.

F.1.2.1 Maximum Sound Level

The highest A-weighted sound level measured during a single event in which the sound level changes value as time goes on (e.g., an aircraft overflight) is called the maximum A-weighted sound level or maximum sound level, for short. It is usually abbreviated by ALM, L_{max} , or L_{Amax} . The maximum sound levels of typical events are shown in Figure F-1. The maximum sound level is important in judging the interference caused by a noise event with conversation, TV or radio listening, sleep, or other common activities.

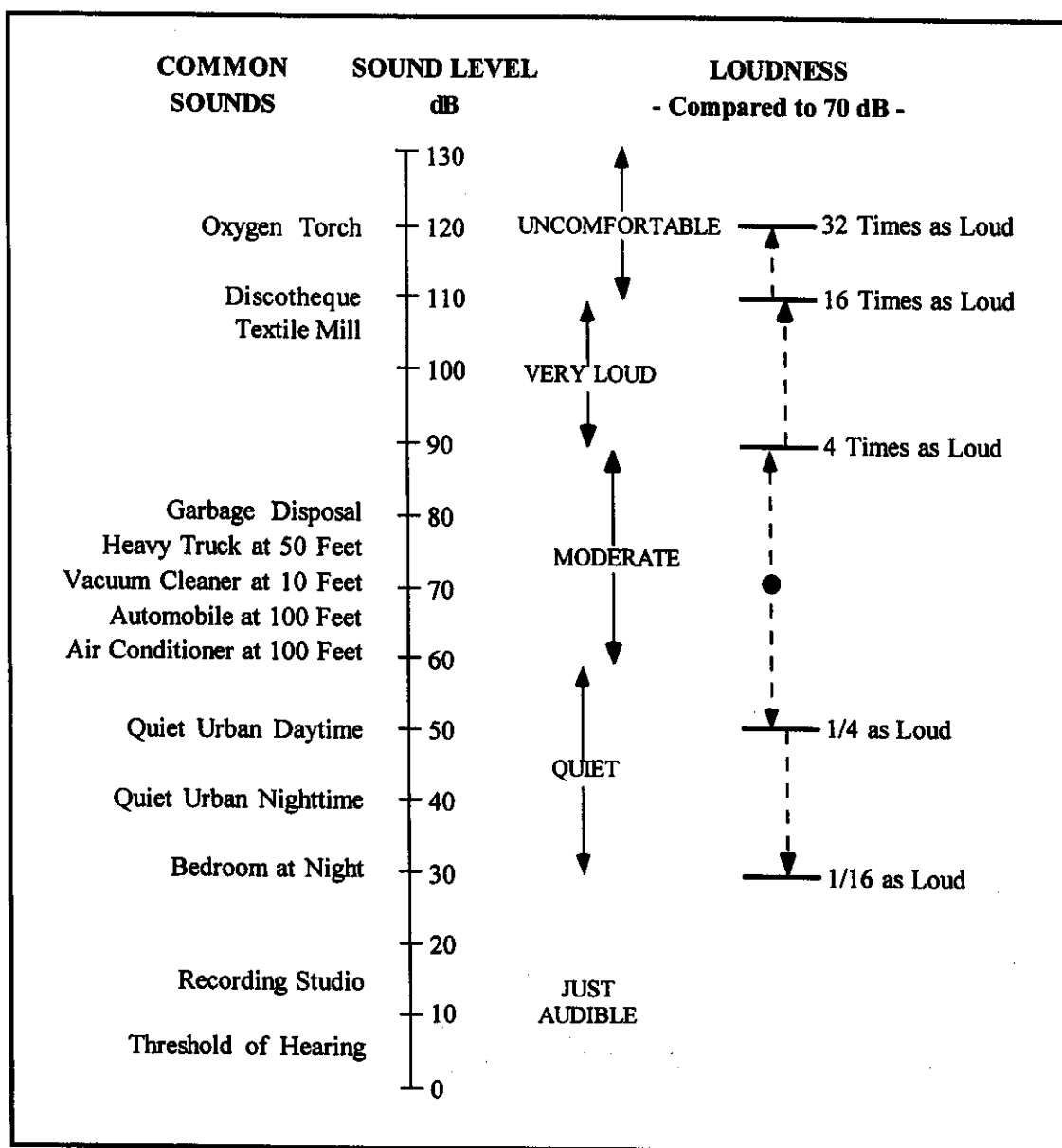
F.1.2.2 Sound Exposure Level

Individual time-varying noise events have two main characteristics – a sound level that changes throughout the event and a period of time during which the event is heard. Although the maximum sound level, described above, provides some measure of the intrusiveness of the event, it alone does not completely describe the total event. The period of time during which the sound is heard is also significant. The Sound Exposure Level (abbreviated SEL or LAE) combines both of these characteristics into a single metric.

Sound Exposure Level is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. Mathematically, it represents the sound level of the constant sound that would, in one second, generate the same acoustic energy as did the actual time-varying noise event. Since aircraft overflights usually last longer than one second, the Sound Exposure Level of an overflight is usually greater than the maximum sound level of the overflight. L_{max} and SEL for representative aircraft are compared in Table F-1.

**Table F-1. Sound Levels at Various Altitudes Above Ground Level
for Representative Aircraft**

Altitude	F-16		C-130		B-1B		F-15		A-10	
	L_{max}	SEL	L_{max}	SEL	L_{max}	SEL	L_{max}	SEL	L_{max}	SEL
500	104	103	91	96	113	112	114	112	94	95
1,000	97	98	84	91	106	107	107	107	87	89
2,000	89	91	76	85	98	101	98	101	78	82
5,000	76	81	66	77	86	92	86	90	65	72
10,000	64	70	56	69	75	82	73	80	54	63
20,000	48	56	46	61	61	69	57	65	43	53



Source: Harris 1979

Figure F-1. Typical A-Weighted Sound Levels of Common Sounds

Sound exposure level is a composite metric which represents both the intensity of a sound and its duration. It does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event. It has been well established in the scientific community that Sound Exposure Level measures this impact much more reliably than just the maximum sound level.

Because the sound exposure level and the maximum sound level are both A-weighted sound levels expressed in decibels, there is sometimes confusion between the two, so the specific metric used should be clearly stated.

Altitudes flown in various airspace elements are a function of the training being performed in the airspace. These altitudes are designated as part of the flight profile entered into the noise model. For the noise analysis associated with the proposals on Hardwood Range, five different flight profiles were developed. For flight along MTRs, the altitudes used ranged from 500 to 1,500 feet AGL. On bombing tracks used to perform air-to-ground training on the range, altitudes ranged from 500 to 5,000 feet AGL. These and three other flight profiles are shown in Table F-2. They include training performed in military operations areas (MOA), flight activity on the Range other than direct target attack training (Range), and that termed "range support MOA" (RSM), which considers use of the airspace around the Range itself used by the aircrews to orient, maneuver, and align themselves for target attack.

Table F-2. Altitude Profiles

	TRAINING USE OF THE AIRSPACE (SHOWING PERCENT OF USE OF ALTITUDES)		
ALTITUDES	MOA	RANGE	RSM
500 – 1,000	11	34	18
1,000 – 2,000	3	7	13
2,000 – 5,000	13	18	18
5,000 – 10,000	15	10	13
> 10,000	58	31	38

F.1.2.3 Day-Night Average Sound Level

Equivalent Continuous Sound Level (L_{eq}), which is the same as the average sound level, is the measurement of sound levels which are averaged over a specified length of time. The Equivalent Continuous Sound Level provides a measure of the average sound energy during the measurement period.

For the evaluation of community noise effects, and particularly aircraft noise effects, the Day-Night Average Sound Level (abbreviated DNL or L_{dn}) is used. Day-Night Average Sound Level averages aircraft sound levels at a location over a complete 24-hour period, with a 10-decibel adjustment added to those noise events which take place between 10:00 p.m. and 7:00 a.m. (local time) the following morning. This 10-decibel "penalty" represents the added intrusiveness of sounds which occur during normal sleeping hours, both because of the increased sensitivity to noise during those hours and because ambient sound levels during nighttime are typically about 10 dB lower than during daytime hours.

Ignoring the 10-decibel nighttime adjustment for the moment, Day-Night Average Sound Level may be thought of as the continuous A-weighted Sound Level which would be present if all of the variations in sound level which occur over a 24-hour period were smoothed out so as to contain the same total sound energy.

Day-Night Average Sound Level provides a single measure of overall noise impact, but does not provide specific information on the number of noise events or the individual sound levels which occur during the day. For example, a Day-Night Average Sound Level of 65 dB could result from a very few noisy events, or a large number of quieter events.

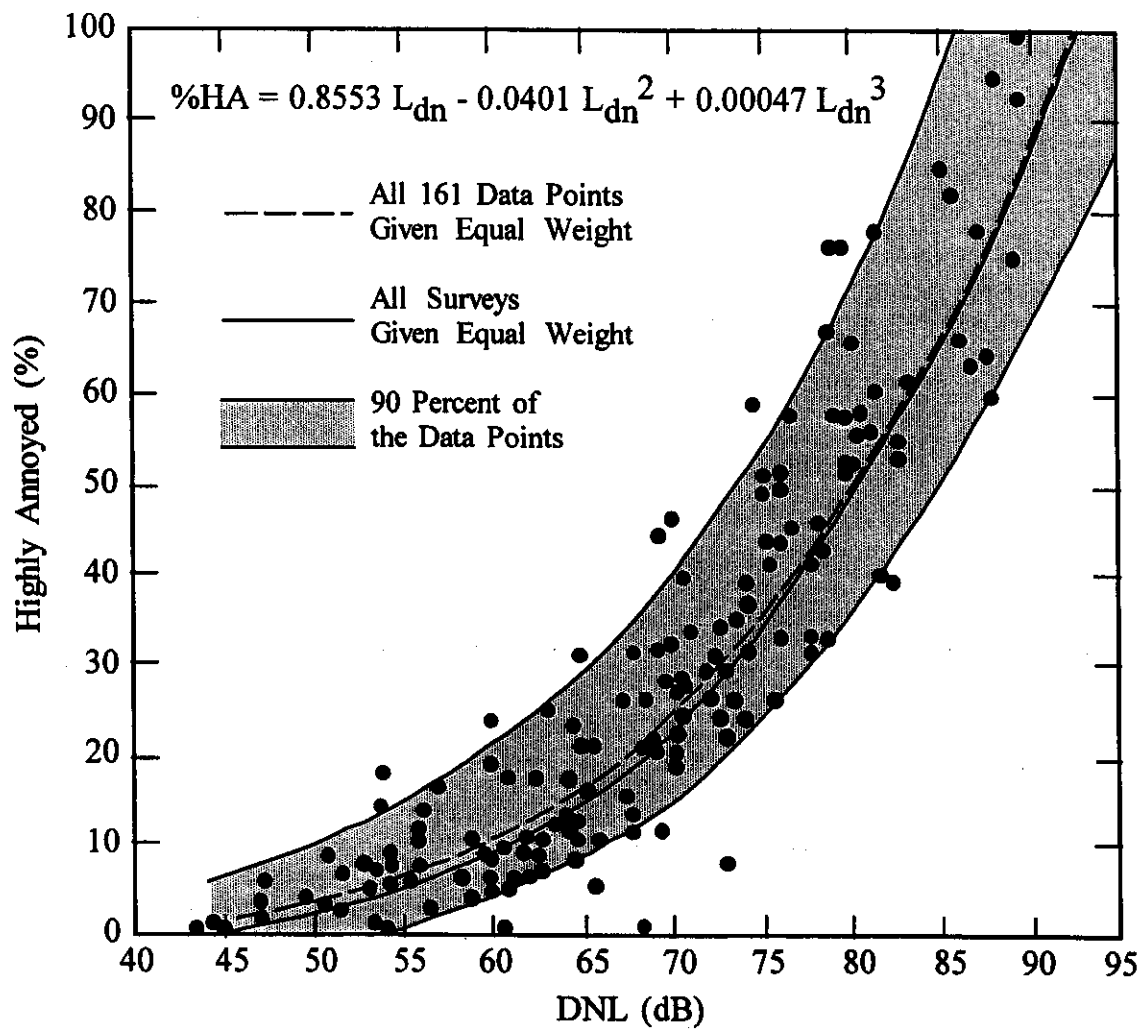
As noted earlier for Sound Exposure Level, Day-Night Average Sound Level does not represent the sound level heard at any particular time, but rather represents the total sound exposure. Scientific studies and social surveys which have been conducted to appraise community annoyance to all types of environmental noise have found the Day-Night Average Sound Level to be the best measure of that annoyance. Its use is endorsed by the scientific community (ANSI 1980; ANSI 1988; USEPA 1972; FICUN 1980; FICON 1992).

There is, in fact, a remarkable consistency in the results of attitudinal surveys about aircraft noise conducted in different countries to find the percentages of groups of people who express various degrees of annoyance when exposed to different levels of Day-Night Average Sound Level. This is illustrated in Figure F-2, which summarizes the results of a large number of social surveys relating community responses to various types of noises, measured in Day-Night Average Sound Level.

Figure F-2 was taken from a 1978 publication (Schultz 1978), and shows the original curve fit. A more recent study has reaffirmed this relationship (Fidell et al. 1991). Figure F-3 (FICON 1992) shows an updated form of the curve fit (Finegold et al. 1994) in comparison with the original. The updated fit, which does not differ substantially from the original, is the current preferred form. In general, correlation coefficients of 0.85 to 0.95 are found between the percentages of groups of people highly annoyed and the level of average noise exposure. The correlation coefficients for the annoyance of individuals are relatively low, however, on the order of 0.50 or less. This is not surprising, considering the varying personal factors that influence the manner in which individuals react to noise. Nevertheless, findings substantiate that community annoyance to aircraft noise is represented quite reliably using Day-Night Average Sound Level.

This relation between community annoyance and time-average sound level has been confirmed, even for infrequent aircraft noise events. A NASA study (Fields and Powell 1985) reported the reactions of individuals in a community to daily helicopter overflights, ranging from one to 32 per day. The stated reactions to infrequent helicopter overflights correlated quite well with the daily time-average sound levels over this range of numbers of daily noise events.

The use of Day-Night Average Sound Level has been criticized recently as not accurately representing community annoyance and land-use compatibility with aircraft noise. Much of that criticism stems from a lack of understanding of the basis for the measurement or calculation of Day-Night Average Sound Level (L_{dn}). One frequent criticism is based on the inherent feeling that people react more to single noise events and not as much to "meaningless" time-average sound levels.



Source: Schultz 1978

Figure F-2. Community Surveys of Noise Annoyance

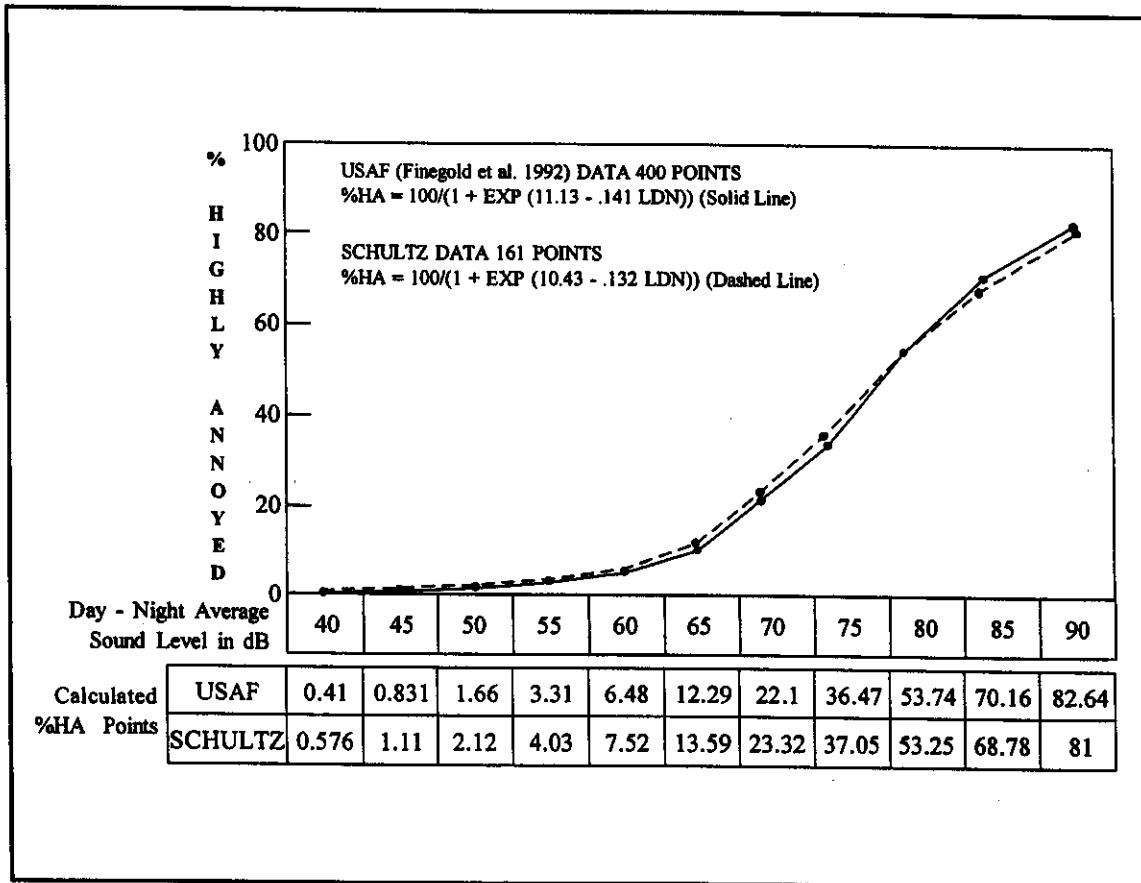


Figure F-3. Response of Communities to Noise; Comparison of Original (Schultz 1978) and Current USAF (Finegold et al. 1994) Curve Fits

In fact, a time-average noise metric, such as L_{dn} , takes into account both the noise levels of all individual events which occur during a 24-hour period and the number of times those events occur. As described briefly above, the logarithmic nature of the decibel unit causes the noise levels of the loudest events to control the 24-hour average.

As a simple example of this characteristic, consider a case in which only one aircraft overflight occurs in daytime during a 24-hour period, creating a sound level of 100 dB for 30 seconds. During the remaining 23 hours, 59 minutes, and 30 seconds of the day, the ambient sound level is 50 dB. The Day-Night Average Sound Level for this 24-hour period is 65.5 dB. Assume, as a second example, that ten such 30-second overflights occur in daytime hours during the next 24-hour period, with the same ambient sound level of 50 dB during the remaining 23 hours and 55 minutes of the day. The Day-Night Average Sound Level for this 24-hour period is 75.4 dB. Clearly, the averaging of noise over a 24-hour period does not ignore the louder single events and tends to emphasize both the sound levels and number of those events. This is the basic concept of a time-average sound metric, and specifically the Day-Night Average Sound Level.

F.1.2.4 Onset-Rate Adjusted Day-Night Average Sound Level

Aircraft operations along low-altitude Military Training Routes (MTRs) generate a noise environment somewhat different from other community noise environments. Overflights are highly sporadic, ranging from five or ten per day to less than five per week. This situation differs from most community noise environments, in which noise tends to be continuous or patterned. Individual military overflight events also differ from typical community noise events, because of the low altitude and high airspeed characteristics of military aircraft operating on Military Training Routes.

To represent these differences, the conventional Day-Night Average Sound Level metric is adjusted to account for the "surprise" (or "startle") effect of the sudden onset of aircraft noise events on humans (Plotkin et al. 1991; Stusnick et al. 1992; Stusnick et al. 1993). For aircraft exhibiting a rate of increase in sound level (called onset rate) of from 15 to 150 dB per second, an adjustment or penalty ranging from 0 to 11 dB is added to the normal Sound Exposure Level. Onset rates above 150 dB per second require an 11 dB penalty, while onset rates below 15 dB per second require no adjustment. The Day-Night Average Sound Level is then determined in the same manner as for conventional aircraft noise events and is designated as the Onset-Rate Adjusted Day-Night Average Sound Level (abbreviated L_{dnr}). Because of the sporadic occurrences of aircraft overflights along Military Training Routes, the number of average daily operations is determined by using the calendar month with the highest number of operations along the Military Training Route. The monthly average is denoted L_{dnmr} .

F.1.3 Land-Use Compatibility

As noted above, the inherent variability between individuals makes it impossible to predict accurately how any individual will react to a given noise event. Nevertheless, when a community is considered as a whole, its overall reaction to noise can be represented with a high degree of confidence. As described above, the best noise exposure metric for this correlation is the Day-Night Average Sound Level or Onset-Rate Adjusted Day-Night Average Sound Level for military overflights.

In June 1980, an *ad hoc* Federal Interagency Committee on Urban Noise published guidelines (FICUN 1980) relating Day-Night Average Sound Levels to compatible land uses. This committee was composed of representatives from the United

States Departments of Defense, Transportation, and Housing and Urban Development; the U. S. Environmental Protection Agency; and the Veterans Administration. Since the issuance of these guidelines, Federal agencies have generally adopted them for their noise analyses.

Following the lead of the committee, the Department of Defense and the Federal Aviation Administration (FAA) adopted the concept of land-use compatibility as the accepted measure of aircraft noise effect. The FAA included the committee's guidelines in the Federal Aviation Regulations (USDOT 1984). These guidelines are reprinted in Table F-3, along with the explanatory notes included in the regulation. Although these guidelines are not mandatory (note the footnote "*" in the table), they provide the best means for determining noise impact in communities surrounding airports. In general, residential land uses normally are not compatible with outdoor Day-Night Average Sound Levels (L_{dn} values) above 65 dB, and the extent of land areas and populations exposed to L_{dn} of 65 dB and higher provides the best means for assessing the noise impacts of alternative aircraft actions.

In 1990, a new Federal Interagency Committee on Noise was formed to review the manner in which aviation noise effects are assessed and presented. This group released its report in 1992 and reaffirmed the use of Day-Night Average Sound Level as the best metric for this purpose (FICON 1992).

Analyses of aircraft noise impacts and compatible land uses around Department of Defense facilities and airspaces are normally made using the computer programs NOISEMAP (Moulton 1992) and/or ROUTEMAP (Lucas and Plotkin 1988). These computer-based simulation programs calculate Day-Night Average Sound Levels at many points on the ground around an airfield or military operations area and draw contours of equal level for overlay onto land-use maps of the same scale. Each program mathematically calculates the Sound Exposure Levels of all aircraft operations for a 24-hour period, taking into consideration the number and types of aircraft, their flight paths and engine thrust settings, the time of day (daytime or nighttime) that each operation occurs, and the onset rate, as appropriate. NOISEMAP and ROUTEMAP utilize the same physical models and aircraft performance data and are collectively referred to as "NOISEMAP technology" or simply "NOISEMAP".

Day-Night Average Sound Levels may also be measured directly around an airfield, rather than calculated with NOISEMAP; however, the direct measurement of annualized Day-Night Average Sound Level is difficult and costly since it requires year-round monitoring or statistically valid seasonal sampling.

NOISEMAP provides an accurate projection of aircraft noise around airfields. NOISEMAP also has the flexibility of calculating sound levels at any specified ground location so that noise levels at representative points under flight paths can be ascertained. NOISEMAP is most accurate for comparing "before and after" noise impacts that would result from proposed airfield changes or alternative noise control actions, so long as the various impacts are calculated in a consistent manner.

Table F-3. Land-Use Compatibility With Yearly Day-Night Average Sound Levels

LAND USE	YEARLY DAY-NIGHT AVERAGE SOUND LEVEL IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals & nursing homes	Y	25	30	N	N	N
Churches, auditoria, & concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business, & professional	Y	Y	25	30	N	N
Wholesale & retail—building materials, hardware, and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic & optical	Y	Y	25	30	N	N
Agriculture (except livestock) & forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming & breeding	Y	Y(6)	Y(7)	N	N	N
Mining & fishing, resource production & extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas & spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits & zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, & camps	Y	Y	Y	N	N	N
Golf courses, riding stables, & water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, state, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally-determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

KEY:

Y (Yes) = Land Use and related structures compatible without restrictions.

N (No) = Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land Use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structures.

NOTES:

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(5) Land-use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

F.2 NOISE EFFECTS ON HUMANS, ANIMALS, AND STRUCTURES

F.2.1 Hearing Loss

Noise-induced hearing loss is probably the best defined of the potential effects of human exposure to excessive noise. Federal workplace standards for protection from hearing loss allow a time-average level of 90 dB over an 8-hour work period, or 85 dB averaged over a 16-hour period. Even the most protective criterion (no measurable hearing loss for the most sensitive portion of the population at the ear's most sensitive frequency, 4000 Hz, after a 40-year exposure) suggests a time-average sound level of 70 dB over a 24-hour period (USEPA 1972). Since it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a Day-Night Average Sound Level of 75 dB, and this level is extremely conservative.

F.2.2 Nonauditory Health Effects

Nonauditory health effects refers to disease (such as hypertension or nervous disorders) other than hearing loss which might be attributable to noise. There is no published evidence that such effects have ever occurred at noise exposure levels below those protective against noise-induced hearing loss, described above. Most studies attempting to clarify such health effects have found that noise exposure levels established for hearing protection will also protect against any potential nonauditory health effects, at least in workplace conditions. The best scientific summary of these findings is contained in the lead paper at the National Institute of Health Conference on Noise and Hearing Loss, held on 22-24 January 1990 in Washington, D.C., which states the following:

"The nonauditory effects of chronic noise exposure, when noise is suspected to act as one of the risk factors in the development of hypertension, cardiovascular disease, and other nervous disorders, have never been proven to occur as chronic manifestations at levels below these criteria (an average of 75 dBA for complete protection against hearing loss for an eight-hour day). At the recent (1988) International Congress on Noise as a Public Health Problem, most studies attempting to clarify such health effects did not find them at levels below the criteria protective of noise-induced hearing loss, and even above these criteria, results regarding such health effects were ambiguous. Consequently, one comes to the conclusion that establishing and enforcing exposure levels protecting against noise-induced hearing loss would not only solve the noise-induced hearing loss problem but also any potential nonauditory health effects in the work place." (von Gierke 1990; parenthetical wording added for clarification.)

Although these findings were directed specifically at noise effects in the work place, they are equally applicable to aircraft noise effects in the community environment. Research studies regarding the nonauditory health effects of aircraft noise are ambiguous, at best, and often contradictory. Yet, even those studies which purport to find such health effects use time-average noise levels of 75 dB and higher for their research.

For example, in an often-quoted paper, two University of California at Los Angeles (UCLA) researchers apparently found a relation between aircraft noise levels under the approach path to Los Angeles International Airport and increased mortality rates among the exposed residents by using an average noise exposure level greater than 75 dB for the "noise-exposed" population (Meecham and Shaw 1979).

Nevertheless, three other UCLA professors analyzed those same data and found no relation between noise exposure and mortality rates (Frerichs et al. 1980).

As a second example, two other UCLA researchers used this same population near Los Angeles International Airport to show a higher rate of birth defects during the period of 1970 to 1972 when compared with a control group residing away from the airport (Jones and Tauscher 1978). Based on this report, a separate group at the U.S. Centers for Disease Control performed a more thorough study of populations near Atlanta's Hartsfield International Airport for 1970 to 1972 and found no relation in their study of 17 identified categories of birth defects to aircraft noise levels above 65 dB (Edmonds 1979).

A recent review of health effects, prepared by a Committee of the Health Council of The Netherlands (CHCN 1996) reviewed currently available published information on this topic. They concluded that the threshold for possible long term health effects was a 16-hour (0600 to 2200) L_{eq} of 70 dB. Projecting this to 24 hours and applying the 10 dB nighttime penalty used with L_{dn} , this corresponds to L_{dn} of about 75 dB. The study also affirmed the risk threshold for hearing loss, as discussed earlier.

In summary, there is no scientific basis for a claim that potential health effects exist for aircraft time-average sound levels below 75 dB.

F.2.3 Annoyance

The primary effect of aircraft noise on exposed communities is one of annoyance. Noise annoyance is defined by the U.S. Environmental Protection Agency as any negative subjective reaction on the part of an individual or group (USEPA 1972). As noted in the discussion of Day-Night Average Sound Level above, community annoyance is best measured by that metric.

Because the EPA Levels Document (USEPA 1972) identified L_{dn} of 55 dB as "...requisite to protect public health and welfare with an adequate margin of safety", it is commonly assumed that 55 dB should be adopted as a criterion for community noise analysis. From a noise exposure perspective, that would be an ideal selection. However, financial and technical resources are generally not available to achieve that goal. Most agencies have identified L_{dn} of 65 dB as a criterion which protects those most impacted by noise, and which can often be achieved on a practical basis (FICON 1992). This corresponds to about 13 percent of the exposed population being highly annoyed.

Although L_{dn} of 65 dB is widely used as a benchmark for significant noise impact, and is often an acceptable compromise, it is not a statutory limit and it is appropriate to consider other thresholds in particular cases. In this EIS, no specific threshold is used. The noise in each affected area is evaluated on the basis of the information presented in this Appendix and in the body of the EIS. Particular attention is given to the ideal 55 dB identified by EPA.

F.2.4 Speech Interference

Speech interference associated with aircraft noise is a primary cause of annoyance to individuals on the ground. The disruption of routine activities such as radio or television listening, telephone use, or family conversation gives rise to frustration and irritation. The quality of speech communication is also important in classrooms, offices, and industrial settings and can cause fatigue and vocal strain in

those who attempt to communicate over the noise. Research has shown that the use of the Sound Exposure Level metric will measure speech interference successfully, and that a Sound Exposure Level exceeding 65 dB will begin to interfere with speech communication.

F.2.5 Sleep Interference

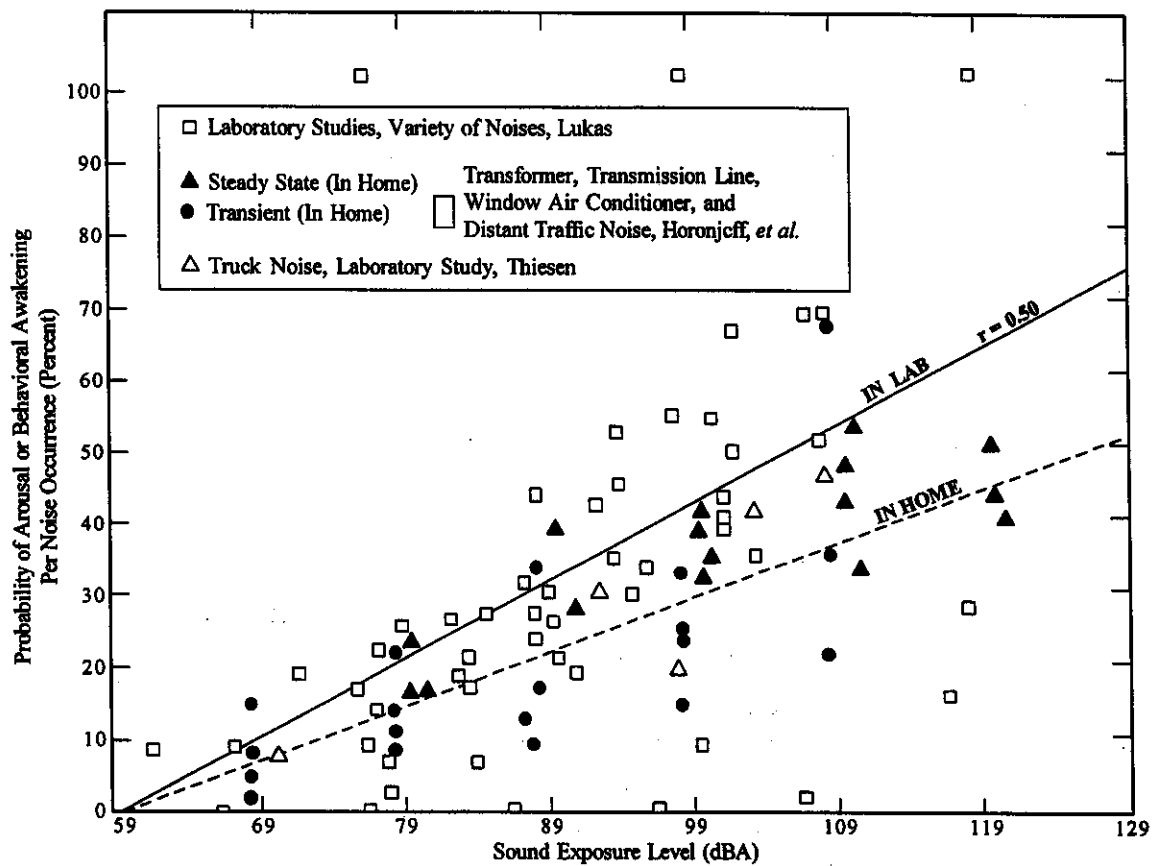
Sleep interference is another source of annoyance associated with aircraft noise. This is especially true because of the intermittent nature and content of aircraft noise, which is more disturbing than continuous noise of equal energy and neutral meaning.

Sleep interference may be measured in either of two ways. "Arousal" represents actual awakening from sleep, while a change in "sleep stage" represents a shift from one of four sleep stages to another stage of lighter sleep without actual awakening. In general, arousal requires a somewhat higher noise level than does a change in sleep stage.

A recent analysis sponsored by the U.S. Air Force summarized 21 published studies concerning the effects of noise on sleep (Pearsons et al. 1989). The analysis concluded that a lack of reliable studies in homes, combined with large differences among the results from the various laboratory studies and the limited in-home studies, did not permit development of an acceptably accurate assessment procedure. The noise events used in the laboratory studies and in contrived in-home studies were presented at much higher rates of occurrence than would normally be experienced in the home. None of the laboratory studies were of sufficiently long duration to determine any effects of habituation, such as that which would occur under normal community conditions.

Nevertheless, some guidance is available in judging sleep interference. The U.S. Environmental Protection Agency identified an indoor Day-Night Average Sound Level of 45 dB as necessary to protect against sleep interference (USEPA 1972). Houses provide insulation from outside noise; in the presence of outdoor noise sources it is quieter indoors than outdoors. Assuming a very conservative structural noise insulation of 20 dB for typical dwelling units, this corresponds to an outdoor Day-Night Average Sound Level of 65 dB as minimizing sleep interference. The 20 dB insulation from noise provided by a home's exterior assumes that the windows are closed. Homes of heavier construction using brick, stone, and masonry can increase these levels to 30 dB. Open windows would reduce the sound insulation to approximately 5 dB for a home with 20 dB with the windows closed. Homes with open windows in the summer would experience higher sound levels inside the home.

A 1984 publication reviewed the probability of arousal or behavioral awakening in terms of Sound Exposure Level (Kryter 1984). Figure F-4, extracted from Figure 10.37 of Kryter 1984, indicates that an indoor Sound Exposure Level of 65 dB or lower should awaken less than 5 percent of those exposed. These results do not include any habituation over time by sleeping subjects. Nevertheless, this provides a reasonable guideline for assessing sleep interference and corresponds to similar guidance for speech interference, as noted above.



Source: Kryter 1984

Figure F-4. Probability of Arousal or Behavioral Awakening in Terms of Sound Exposure Level

F.2.6 Noise Effects on Domestic Animals and Wildlife

Animal species differ greatly in their responses to noise. Each species has adapted, physically and behaviorally, to fill its ecological role in nature, and its hearing ability usually reflects that role. Animals rely on their hearing to avoid predators, obtain food, and communicate with and attract other members of their species. Aircraft noise may mask or interfere with these functions. Secondary effects may include nonauditory effects similar to those exhibited by humans – stress, hypertension, and other nervous disorders. Tertiary effects may include interference with mating and resultant population declines.

There are available many scientific studies regarding the effects of noise on wildlife and some anecdotal reports of wildlife "flight" due to noise. Few of these studies or reports include any reliable measures of the actual noise levels involved. However, in the absence of definitive data on the effect of noise on animals, the Committee on Hearing, Bioacoustics, and Biomechanics of the National Research Council has proposed that protective noise criteria for animals be taken to be the same as for humans (NRC NAS 1977).

F.2.7 Noise Effects on Structures

Normally, the most sensitive components of a structure to airborne noise are the windows and, infrequently, the plastered walls and ceilings. An evaluation of the peak sound pressures impinging on the structure is normally sufficient to determine the possibility of damage. In general, at sound levels above 130 dB, there is the possibility of the excitation of structural component resonances. While certain frequencies (such as 30 Hz for window breakage) may be of more concern than other frequencies, conservatively, only sounds lasting more than one second above a sound level of 130 dB are potentially damaging to structural components (NRC NAS 1977).

A recent study, directed specifically at low altitude high-speed aircraft on Military Training Routes, showed that there is little probability of structural damage from such operations (Sutherland 1989). One finding in that study is that sound levels at damaging frequencies (e.g., 30 Hz for window breakage or 15 to 25 Hz for whole-house response) are rarely above 130 dB.

Noise-induced structural vibration may also cause annoyance to dwelling occupants because of induced secondary vibrations, or "rattle", of objects within the dwelling – hanging pictures, dishes, plaques, and bric-a-brac. Window panes may also vibrate noticeably when exposed to high levels of airborne noise, causing homeowners to fear breakage. In general, such noise-induced vibrations occur at sound levels above those considered normally incompatible with residential land use. Thus, assessments of noise exposure levels for compatible land use should also be protective of noise-induced secondary vibrations.

F.2.8 Noise Effects on Terrain

Members of the public often perceive that noise from low-flying aircraft can cause avalanches or landslides by disturbing fragile soil or snow structures, especially in mountainous areas, causing landslides or avalanches. There are no known instances of such effects, and it is considered improbable that such effects will result from routine, subsonic aircraft operations.

F.2.9 Noise Effects on Historical and Archaeological Sites

Because of the potential for increased fragility of structural components of historical buildings and other historical sites, aircraft noise may affect such sites more severely than newer, modern structures. Again, there are few scientific studies of such effects to provide guidance for their assessment.

One study involved the measurements of sound levels and structural vibration levels in a superbly restored plantation house, originally built in 1795, and now situated approximately 1,500 feet from the centerline at the departure end of Runway 19L at Washington Dulles International Airport. These measurements were made in connection with the proposed scheduled operation of the supersonic Concorde airplane at Dulles (Wesler 1977). There was special concern for the building's windows, since roughly half of the 324 panes were original. No instances of structural damage were found. Interestingly, despite the high levels of noise during Concorde takeoffs, the induced structural vibration levels were actually less than those induced by touring groups and vacuum cleaning within the building itself.

As noted above for the noise effects of noise-induced vibrations of normal structures, assessments of noise exposure levels for normally compatible land uses should also be protective of historic and archaeological sites.

APPENDIX G

CORRESPONDENCE RECEIVED IDENTIFYING THREATENED AND ENDANGERED SPECIES



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

March 13, 1995

**Hardwood EIS
C/O Mr. Jeffrey Weiler
Science and Engineering Associates, Inc.
7918 Jones Branch Driver, Suite 500
McLean, VA 22101**

**SUBJECT: EIS review for the Hardwood Range Expansion and related
airspace actions, Hardwood Range.**

Dear Mr. Weiler:

**The Iowa Department of Natural Resources has reviewed the
Environmental Impact Statement for the Air National Guard's proposed
modification of the airspace into the Southwest Corridor, which would
include portions of northeastern and east central Iowa.**

**Enclosed are four pages of known nesting sites of sensitive species and a
list of conservation lands in the proposed flight path. These areas should
be avoided by maintaining a 1500 foot minimum altitude or increasing
separation distances as discussed on pages 1 -10.**

**Any consideration that these locations can receive would be appreciated.
Thank you for the opportunity to review and comment on this proposed
training route. If you have any questions in regard to this letter please call,
Mr. John Fleckenstein in this office at 515/281-8967.**

Sincerely,

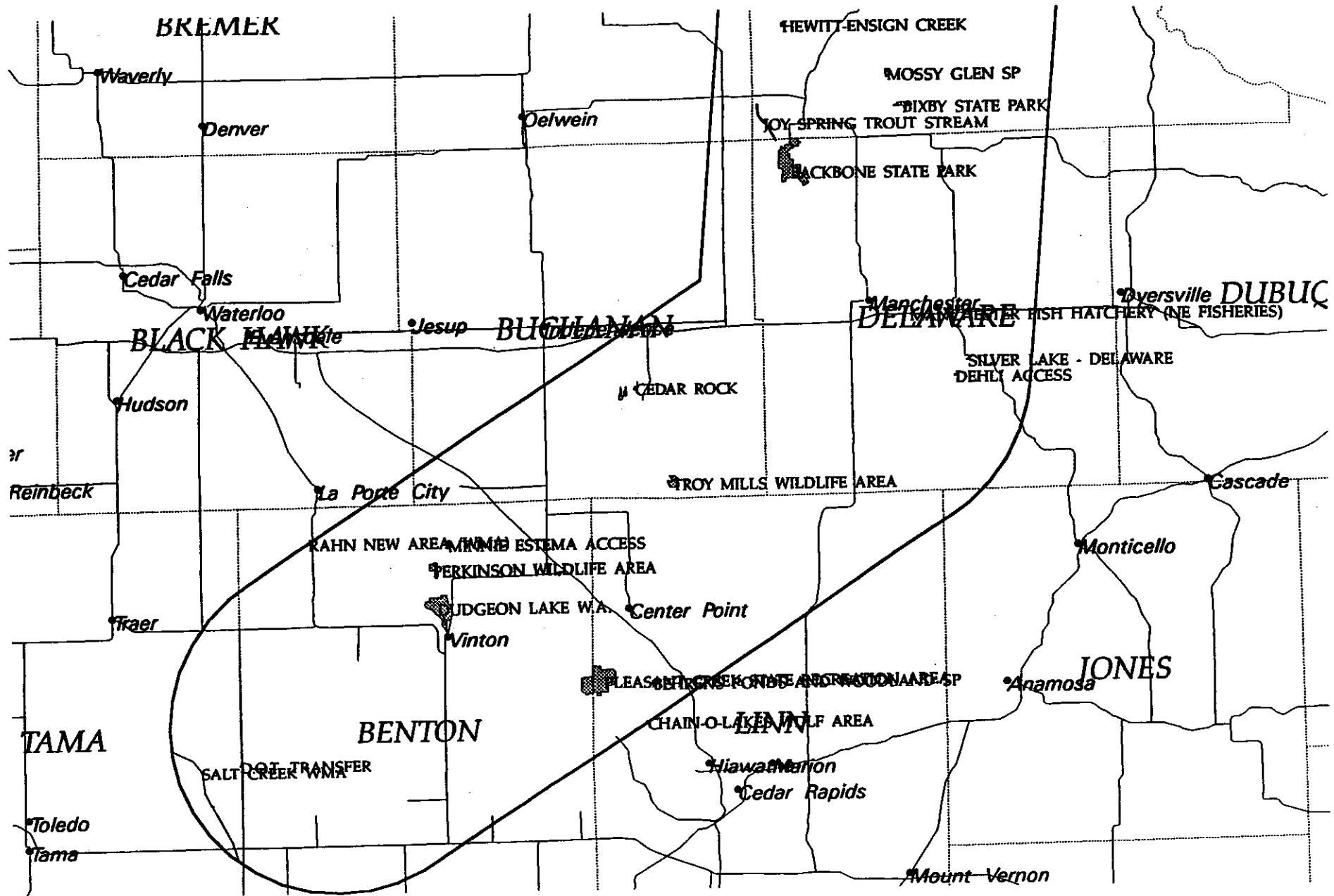
**LARRY J. WILSON, DIRECTOR
IOWA DEPARTMENT OF NATURAL RESOURCES**

**cc: Mr. John Fleckenstein, IDNR, NAI
enclosure**

Southwestern Corridor

With State Managed Lands - South Part

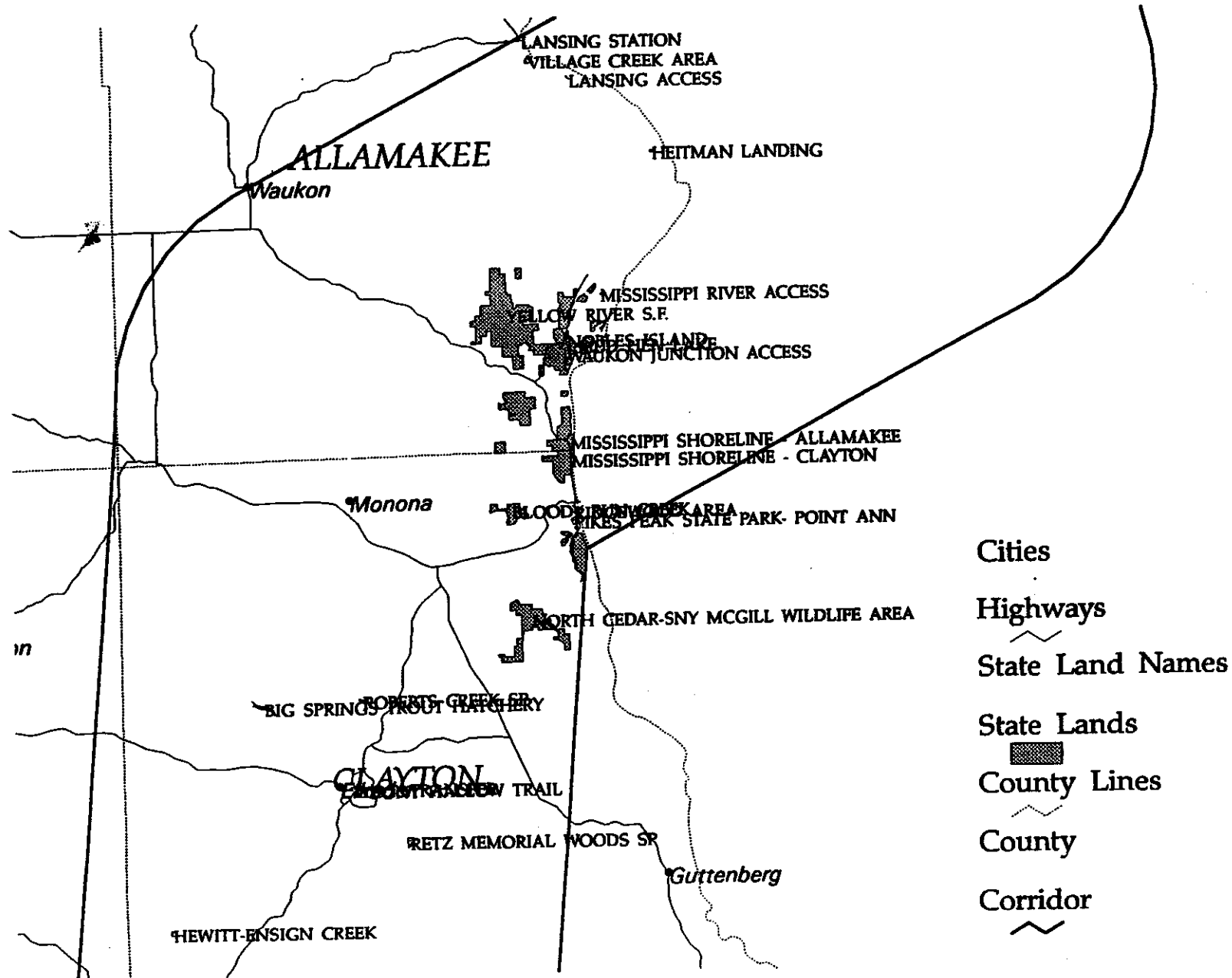
G-2



Southwestern Corridor

With State Managed Lands - North Part

G-3





George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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March 22, 1995

Mr. Jeffrey Weiler
Science and Engineering Associates, Inc.
7918 Jones Branch Drive, Suite 500
McLean, VA 22101

RE: Hardwood EIS

Dear Mr. Weiler:

The Department of Natural Resources has reviewed the January 23, 1995 "Notice of Intent (NOI) to prepare an Environmental Impact Statement for the Hardwood Range Expansion and Related Airspace Actions, Hardwood Range, Wood County, Wisconsin" and the December 1994 "Description of the Proposed Action and Alternatives (DOPAA) for the Hardwood Range Expansion and Related Airspace Actions." Based on these documents, we offer the following comments and suggestions for issues that need to be addressed in the Environmental Impact Statement (EIS).

The DOPAA covers both the expansion of the existing Hardwood Range, the modification of existing airspace and Military Training Routes (MTRs), and the addition of 2 new MTRs. There could be significant impacts to the natural and human environment from these proposed activities in several areas including: forestry, wetlands, surface waters, groundwater, endangered species, agriculture, public recreation, and air quality. This letter provides our comments on the DOPAA with suggestions for analysis that should be included in the EIS. The letter is organized by general comments, comments on the proposed Hardwood Range expansion, and comments on the various airspace actions.

GENERAL COMMENTS:

1. The title of the NOI indicates that the range expansion and airspace actions are "related"; however the text of the document makes it clear that the airspace actions are "stand-alone" and "independent of the range expansion." If the actions are being considered independent, the EIS should explain the rationale. This may be confusing to the public, thus the EIS will need to very clearly cover the impacts of each of the proposed actions separately, as well as together. Does the ANG envision one Record of Decision or several, since these would be separate actions? Will the EIS process for all the proposed actions need to be completed before any flights over the proposed MTRs take place?

2. NEPA requires a thorough evaluation and analysis of alternatives to the proposed action(s). Based on the review of the DOPAA, it is difficult to know the level of analysis that has gone into the alternatives for both the range expansion and the airspace actions.

The analysis of alternatives for the range expansion should include a summary of the national situation in relation to the need for this facility and whether alternatives in other parts of the nation might be feasible. The DOPAA (page 1-7) refers to an assessment of ranges within 200 miles of Hardwood, and the EIS should provide the details on what ranges were evaluated and the reasons they were determined impracticable for expansion. The EIS should clearly evaluate alternative configurations for the expansion including: expansion south in Juneau County, modification of the airspace to accommodate training objectives using the existing range, and other modifications of the target complex and attack axes at the existing range.

Based on the DOPAA, it is not clear why airspace modification requires additional range lands. Alternative sizes and configurations for the expansion, particularly those that would minimize impacts in Wood County, should be evaluated. The DOPAA also makes mention of Fort McCoy as an alternative, however much greater detail as to why this alternative is not practicable for ANG use is needed. Was the alternative of developing ANG use at Fort McCoy in addition to modifying the use of Hardwood considered? In summary, the EIS needs to look at the viable alternatives including combinations of alternatives to meet the project objectives while minimizing and avoiding, to the greatest extent possible, potentially harmful environmental impacts.

As far as the MTRs and airspace actions, the EIS will need to explain how the proposed routes were chosen and what alternatives have been evaluated. How the "narrowing criteria" (page 1-8) were developed and the purpose of each of these "shoulds" included in the screening criteria needs explanation in the EIS. As with the expansion, a full evaluation and analysis of alternatives is needed in the EIS.

3. The Department will make available any information and data we have for use in the preparation of the EIS. We request that all inquiries go through Dave Siebert, our Central Office contact person. In some cases, due to limited staff time and budget, we may ask that the consultant review files and make and pay for copies as needed.

4. The EIS will need to provide good maps of the range site, identifying plant communities, waterways, and proposed appurtenances. We will need maps portraying: the areas to be cleared, grubbed and graded; existing clear zones; runways and assault strip including approach trapezoids; access roads; drop zones; target areas; fire breaks; wetlands; streams and ponds; drainage ditches; etc. We will also need better maps of the proposed MTRs. The maps and figures should be of sufficient scale to at least relate to USGS 15-minute quadrangle maps. Detailed aerial photos and aeronautical charts would also be helpful.

HARDWOOD RANGE EXPANSION AND RESTRICTED AIRSPACE R-6904:

The proposed action will result in direct and secondary impacts to the site and surrounding lands due to construction activities and operation of the range and restricted airspace. The withdrawal of lands from the county forest and the need for replacement of those lands may have socio-economic impacts that must be addressed. Below are specific comments on the proposed action:

1. Impacts of Existing Range

Have there been any environmental evaluations of the existing Hardwood Range's effect on the natural environment? Much of the EIS will focus on predicting the impacts to the expansion area, thus reference to actual observations would be useful. Have any before/after studies of wildlife usage, water quality, hazardous waste, soil impacts, etc., been conducted for the existing range or similar ranges in the region (e.g. Fort McCoy)? The EIS should reference similar studies conducted for other ranges.

2. County Forest Withdrawal and WEPA

The proposal would necessitate withdrawal of 6,162 acres of Wood County Forest lands from the County Forest System. Our comments and concerns related to the natural resources and associated human uses of the land are included by topic area below. The Department has statutory approval authority for county forest withdrawals under s. 28.11(11)(a) (b), Wis. Stats. Under that process (see attached Public Forest Lands Handbook), the Department must review the action in accordance with the Wisconsin Environmental Policy Act (WEPA) and Chapter NR 150, Wis. Adm. Code. In the past, DNR has done EIS's for certain withdrawals of far less magnitude than this proposal and would likely do so again if Wood County applies for a withdrawal over 6,000 acres.

The WEPA process is modelled after the federal NEPA process, thus we envision that much of the information needed for the state EIS will be provided by the ANG EIS. NR 150 recognizes that whenever practical, the Department may adopt an environmental analysis conducted by another agency to avoid duplication of effort and delay. Though the Department may adopt all or a portion of the federal EIS, we will still prepare an independent decision document based on our review and analysis of the objective data. The WEPA process would not begin until the county formally requests the withdrawal of lands from the county forest. When and if that occurs, the Department will decide how best to meet the requirements of WEPA and NR 150.

3. County Forest Withdrawal Replacement Lands

The Department will likely require that the County purchase land of comparable ecological quality to those lands withdrawn from the county forest for the expansion. This action would

require an analysis of the location of alternative lands, the economic impacts (tax base concerns) of land acquisition, an assessment of the value of these lands in comparison to what is being withdrawn, and a discussion of the timeline that can be expected to fully "replace" the lands withdrawn for the project? The analysis of the replacement lands issue will be the cornerstone of the WEPA analysis required for the County Forest withdrawal. Since NEPA requires that agencies consider the secondary impacts of an action, we feel it is not only appropriate, but critically important, that the ANG EIS provide a full analysis of the social and economic impacts of removing the forest lands from the program and the various alternatives for replacing them with other lands within the county.

4. Land Transfer

The EIS must evaluate the alternatives for transfer of land for the expansion project. What are the advantages, disadvantages, and socioeconomic impacts associated with fee simple purchase, lease, easements, and/or condemnation of both county and private lands?

This portion of the EIS should also evaluate the current status and future of the existing lease with Juneau County for the existing range, which is due to expire in 2004. What is the ANG plan for securing the existing range property into the future? Certain alternatives for securing the Juneau County lands may necessitate county forest withdrawal and possibly the need for replacement lands (see #3 above). Such a proposal would trigger similar WEPA compliance needs (see #2 above), and thus the EIS should evaluate the associated socioeconomic impacts of any alternatives for securing the Juneau County portion.

5. Endangered, Threatened and Special Concern Species

In order to satisfactorily assess the potential impacts of this project on endangered resources, several types of information are needed in the EIS: the location and condition of endangered resources within the areas of disturbance; the nature of the impacts that are expected from the proposed project; how these impacts will affect the survival and recovery of rare species in the area; and how the proposed project will affect land management activities and options on nearby public lands in the future.

Unfortunately, we are unaware of any endangered resource inventory work that has been completed for either the existing range or the proposed expansion area. As such, our Natural Heritage Inventory (NHI) database contains only limited information on the occurrences of endangered resources in the vicinity of the proposed project. As we noted in our letter of May 12, 1992 to Mr. Craig Bloxham (the consultant working on the expansion project at that time) six rare animal species occur, or have been known to occur, near the expansion site. These species include: Eastern Massasauga Rattlesnake (*Sistrurus catenatus*), State Endangered and Federal candidate; Great Egret (*Casmerodius albus*), State Threatened; Red-shouldered Hawk (*Buteo lineatus*), State Threatened; Redfin Shiner (*Notropis umbratilis*), State Threatened; Karner Blue Butterfly (*Lycaeides samuelis*), State Special Concern and Federally Endangered; and Striped Hairstreak (*Strymon liparops strigosum*), State Special

Concern. In addition, a number of rare plant species are known to occur near the existing range.

It is our understanding that both the existing gunnery range and the area proposed for expansion contain a mosaic of forested and non-forested wetlands and upland pine/oak/aspen forests. Although disturbances ranging from ditching to forestry practices to military operations have impacted much of the area, it has retained much of its ecological importance. Given the relative size and location of the gunnery range and proposed expansion site, it is likely that one or more of the above six species (and probably other rare species) occur in the area but are currently unrecorded.

In order to satisfactorily assess the impacts to endangered resources and to evaluate measures to minimize and, if necessary, mitigate adverse effects, the following information needs to be gathered and included in the EIS:

- Biological composition of the proposed expansion site

The EIS must document what rare species and natural communities are present within the expansion area. Information is needed on endangered resources occurring within the area where direct impacts are expected (e.g., the assault strip, drop zone, high noise areas, etc.) as well as on the surrounding lands where indirect impacts may result.

- Biological composition of the existing range

In order to determine how endangered resources present in the expansion area may be impacted, the EIS should include information on rare species and natural communities occurring within the existing range. As discussed in #1 above, an assessment of how operations at the existing range have affected endangered resources (positively and negatively) is needed in order to allow a proper analysis of impacts that will likely result from an expansion.

We understand that Camp Williams/Volk Field personnel are interested in submitting a grant proposal to the Department of Defense Legacy program to conduct surveys at Camp Williams and the existing range. We suggest that ANG coordinate their survey work with this effort.

- Landscape analysis of the project's impacts on management goals of surrounding public lands

Because this project potentially will have considerable effects on adjacent lands, we believe it is necessary to evaluate this project in the context of the surrounding landscape. No new surveys are necessary to accomplish this, rather ANG should compile existing information on endangered resources occurrences and land management goals on adjacent lands. We will be sending ANG's contractor, Johnson, Johnson & Roy, a listing from the NHI of endangered

resources occurring within 20 miles of the proposed expansion site. We recommend that the ANG or its consultant also contact the managers of public lands in the area for endangered resource information which may not be incorporated in the NHI database. ANG should use this information to assess how the proposed project will impact the survival and recovery of rare species in the region and the extent to which the project will influence management options on nearby public and private lands. In their landscape analysis, the ANG should include issues such as: how the project will affect movement of species in and around the area, and the nature and extent of habitat fragmentation and its affect on endangered resources. Landscape scale analysis will be particularly important in assessing impacts resulting from the proposed changes in airspace use in the vicinity of the existing range.

In developing survey protocols, we recommend that the ANG follow a "coarse filter-fine filter" approach. That is, initially identifying and mapping the native plant communities occurring at the existing range and the proposed expansion area and then using this information to direct and focus the plant and animal species surveys is recommended. Bureau of Endangered Resources staff will be available to review survey protocols as needed and to assist ANG in ensuring that information gathered for the review of this project is appropriate, meets scientific standards, and is adequate to allow the assessment of potential impacts of the project.

We also encourage the ANG to submit the complete survey results to the Bureau of Endangered Resources for inclusion in the NHI database. This will allow the DNR, ANG, and other agencies to assess future land management and development proposals with the best available data, while minimizing the need for project applicants to conduct additional surveys.

Since several federally listed or candidate species (Eastern Massasauga Rattlesnake, Karner Blue Butterfly, Bald Eagle, Timber Wolf, Trumpeter Swan) are likely to be important elements in the review of this project, I recommend that the ANG contact Ms. Cathy Carnes (414/433-3803) of the US Fish & Wildlife Service for advice on appropriate actions with regards to these species.

We have also enclosed a copy of the NHI Working List which lists those species the program is currently monitoring. As the ANG develops their survey protocols, they may find this list helpful. If additional information related to endangered resources is needed, please contact John Pohlman (608/264-6263).

6. Other Wildlife

The County Forest to be affected by the proposed project has excellent wildlife habitat. Deer populations are currently estimated at approximately 45 deer per square mile. Other upland game species include Ruffed Grouse, Wild Turkey, Cottontail Rabbit, Snowshoe Hare, Squirrel, Raccoon, and some waterfowl. The site also contains excellent habitat for furbearers including Mink, Beaver, Muskrat and Otter and for non-game species such as

Sandhill Cranes, hawks, and owls. As with the rare species listed above, we will need to have biological information gathered from the site. The protocol suggested above should provide adequate information as to the wildlife species and habitat found on the site.

7. Wetlands

The project site contains great acreage of forested, shrub carr and emergent/wet meadow wetlands, and it is likely that whatever construction activities occur at the site could have significant adverse impacts on these wetland resources. The EIS should describe and delineate the types and quantities of wetlands that would be dredged, filled, dewatered, bombed, strafed, or otherwise affected. We will need detailed maps of all wetland communities (and other plant communities) that exist on and near the site, including those that may be directly affected. Wisconsin Wetland Inventory maps are a good first screening of wetlands found on the site, however ground verification and delineation will be necessary to accurately determine the magnitude of the wetlands to be altered or destroyed. Under state and federal regulations, alternatives must be considered to avoid, or if that is not possible, minimize and mitigate adverse effects to wetlands. Federal wetland regulations may also require compensation (i.e. compensatory mitigation) for unavoidable wetland losses. As such, the EIS should include associated costs and provide an evaluation of potential compensatory mitigation sites on or near the affected areas.

8. Forestry

The Wood County Forest is actively managed to maintain an ecologically sustainable program including the production of timber and wildlife along with maintenance of water quality and public recreation. Effects to future timber production should be assessed. Forested areas to be removed or converted to other cover types should be delineated and quantified. Merchantable timber in the proposed Hardwood Range expansion area consists primarily of aspen, oak, and pines (red, white, and jack). There are approximately 996 acres of immature timber and 287 acres of off-site aspen. According to a 1992 appraisal, there were approximately 3,734 acres of merchantable timber present comprising over 31,000 cords and almost two million board feet, with a current value of \$514,797. The 1994 appraisal is currently being developed, but should be higher than 1992 as those figures were derived from out-dated reconnaissance data and the stumpage values in the area seem to be on the rise.

In addition to the hardwoods, there are some red pine plantations established on the proposed site that foresters regard as some of the most productive in the area. The prospect of losing these plantations is of special concern to the foresters because of the relatively small percentage of the county forest in pine, the suitability of the soils for future plantations, and the economic value of such plantations.

9. Waterway Impacts

Chapter 30, Wis. Stats., requires state permits for changes to the bed or banks of navigable waters, and Chapter 31, Wis. Stats., requires state approval of any dams (obstructions). The expansion area is located in what was once referred to as the Cranberry Creek Drainage District, which was dissolved in 1939. Since this was a drainage district there are many ditches that were created, some of which are independent of Cranberry Creek and others which are lateral ditches to the creek. Chapter 30 permits may be needed for activities on Cranberry Creek as well as for many of the lateral ditches connected to the creek, because the lateral ditches fall under Chapter 30 jurisdiction when agriculture is not the current land-use. Chapter 31 permits may be needed for activities on Cranberry Creek and any other stream that has navigable stream history.

The EIS should describe and map all surface waters on and adjacent to the site including ditches, streams, and open water ponds. The physical, chemical and biological characteristics of the waterbodies, as well as flow and drainage information, should be included. Good baseline information is needed in order to allow for an evaluation of predicted impacts.

10. Public Recreation

The EIS should assess impacts of the proposed expansion on recreation within and near the site. Nearby public recreation areas include Sandhill State Wildlife Area (approximately 3 miles from the proposal), Meadow Valley Wildlife Area (approximately 6 miles away), the Wood County Public Hunting Grounds (less than 3 miles away), and the Necedah National Wildlife Refuge (approximately 3 miles away). The EIS should address current public access and recreational use of the existing range and what the proposed plan is for use of and access to the expansion area. The range expansion site and nearby areas support the following types of activities that may be impacted by the project: hunting and trapping, non-consumptive wildlife observation, snowmobiling, cross-country skiing, all-terrain vehicles, hiking, picnicking, berry picking, camping, biking, and sightseeing.

The various county or other snowmobile and recreational trails in the area should be described and portrayed on maps, and the expected effects to them should be summarized. Alternatives for re-routing of recreational trails should be evaluated.

11. Fire Control

Details of fire suppression plans, chances of igniting grass, brush, and forest fires by strafing operations, responsibility and access for fire fighting associated with this proposal should be described. DNR burning permits would be required at times when there is no snow cover for burning brush, stumps, trees, and other materials.

12. Fisheries

We do not have surveys or inventories of the fish populations of the various waterways

within the proposed project site. Surveys of any waters that might be affected by the proposal should be conducted and funded by the project sponsor. Local information indicates that Cranberry Creek ditch has some Northern Pike, panfish, suckers, and possibly a few Largemouth Bass.

13. Water Quality

The EIS should include a section on existing water quality for both surface and groundwater in the project area. The ANG should compile existing DNR, USGS and Wisconsin Geological and Natural History Survey data prior to meeting with appropriate DNR staff to determine what additional water quality data will be needed. Sampling groundwater constituents associated with munitions and equipment uses (e.g. tethered jeep, parking area, fuel storage, etc.) at both the existing Hardwood Range and at the proposed target areas (to establish baseline conditions) is recommended. The EIS should address any impacts that have occurred to surface and groundwater due to the existing range and evaluate potential future impacts if the new expansion occurs.

Contingency plans should be developed for addressing groundwater contamination as a result of fuel spills on the site and associated with possible aircraft crashes.

14. Air Quality

The EIS should include a section on existing versus future air quality with the expanded use and construction of the new site. An analysis (preferably quantitative) should be conducted of emissions expected from mechanized ground equipment, aircraft, waste munitions disposal operations, dust from construction and operation of the range and assault strip, clearing of land, and burning of various wastes.

15. Waste Disposal

The types and quantities of wastes, locations of current and proposed disposal areas, and the associated environmental effects of waste disposal site construction and operation should be discussed in the EIS. The nature of the non-explosive bombs and the other strafing ammunition should be described. Are any hazardous materials proposed to be disposed of on-site? What would the periodic clean-up operations involve? Will bullets and other ordnance be dug up from certain depths in the soils, or just those lying on the earth's surface? Will some or all of the spent munitions that are recovered be recycled?

16. Noise

An analysis of noise expected from both the existing and proposed construction and operations and the associated impacts on people and wildlife on or near the range should be included in the EIS.

17. Gravel and borrow pits

The EIS should address where the gravel (and other borrow) for the assault strip and other access roads and construction will come from. Locations and reclamation plans for new and existing gravel pits should be described.

18. Erosion Control

In accordance with NR 216, Wis. Adm. Code, construction activities in excess of 5 acres require a permit from the Department which necessitates the development and approval of an erosion control plan. Such a plan must contain specific proposals for implementing and maintaining proper erosion/sediment control measures for the various construction areas including the assault strip, access roads, and target areas.

19. Land-use management plan

The ANG should develop a detailed area land use map and quantify existing versus proposed land uses in the project area. Would agricultural lands within the proposed expansion area be reforested? The plan should include measures for managing for public recreational uses of the land and adjacent affected properties.

20. Socio-economic issues

We recommend that the ANG analyze social and economic impacts expected from the proposal, including effects on existing land use plans and trends, political boundaries, tax base and government expenditures, property values, employment and income, transportation systems, public services, agricultural use, energy resources, sewage treatment needs, recreation, utility services, and solid waste disposal. Such analysis should examine not only the effects on ANG-related local and regional economies, but also the possible impacts to timber production-related and recreational support-related industries and businesses. As stated above, we are especially concerned with socio-economic impacts associated with replacement of lands withdrawn from the county forest program.

AIRSPACE ACTIVITIES

Whereas the expansion of the Hardwood Range will have definite direct impacts to the land and resources on the County Forest property, the impacts of the MTRs and other airspace actions are more difficult to pinpoint. Some of the comments provided above will also relate to MTRs. Our concerns and questions related to the proposed airspace actions are listed below:

1. MTR Impacts in Wisconsin and Other States

The EIS should identify past problems associated with MTRs in the state and across the country. What are the impacts that will occur as a result of the proposed flight routes? Are there any impact to property values? Do the planes cause damage to property? Have there been documented impacts to dairy and other farming operations? What other concerns have been raised by people living in existing MTRs? What research has been conducted on low level flights and wildlife impacts? The EIS should outline the issues, discuss how the issues pertain to the proposed actions, and identify mitigative measures to address impacts.

2. Existing and Proposed MTRs Map

The EIS should show all existing training routes in the state and assess the cumulative impacts of adding new routes. Review of potential impacts to recreation and wildlife (including endangered, threatened and special concern species) is difficult without a more precise understanding of where flights might occur. More detailed mapping will aid in that review and should allow for more constructive comments on the Draft EIS.

3. Periodic Re-Review of MTRs

Once MTRs are approved, is there any provision for revisiting the evaluation after a certain time period? We recommend that a timeframe be established (e.g. 5 years) after which the Guard would need to re-evaluate the affects of the route and make decisions about revisions or mitigative measures.

4. Low-Level Flight Altitudes

Why are the MTRs approved for a 300 ft. altitude if regulations require a minimum altitude of 500 ft.? How is this measured in the very hilly terrain of southwestern Wisconsin-- from the valley bottom or ridge top? In addition, reference is made to training proficiency as low as 100 ft. above ground level (Pages A-5 to A-9). During the scoping process there has been much public confusion on these facts, and clarification is needed in the EIS.

5. DNR Aviation Concerns

The Department's Aeronautics Section is involved in fire detection and suppression (using established low-level routes and deviating from these routes when necessary to accomplish the mission), resource management functions (using varied blocks of airspace), and law enforcement activity (using specific blocks of airspace). These operations are carried out through each of our six Districts. The Bureau of Program Services-Aeronautics staff have reviewed the proposed MTRs and expansion area airspace, transferred the routes onto standard aeronautic charts, and have determined that the proposed routes could have conflicts with our activities in each of the North Central, Southern and Western Districts.

Though all of the above mentioned Aeronautics operations will be affected, we anticipate that fire suppression and detection activities will be impacted the greatest. Fire suppression

activities are flown from as low as 200 ft. AGL up to 3000 to 4000 ft. MSL. During these activities, the pilot's primary attention is on the ground, observing, photographing, mapping, and reporting to a command center. It is at these times that they are most vulnerable to mid-air collision. Detection activities involve flights from about 1500 to 3000 ft. MSL in a fashion commensurate with VFR. Pilots have reported several near miss situations with military aircraft approaching them from the rear.

DNR pilots need assurance that military aircraft flying mid- and low-level missions will be able to avoid them. In addition, avoidance of wild fire smoke columns by at least 2000 ft. (in both the vertical and horizontal directions) will help to avoid conflicts in the airspace.

Since Department activities occur at low levels and low rates of speed we have great concern with possible conflicts with Guard units operating at low level/high rate of speed in the same airspace. Communication on when the MTRs will be in use is important. We will need to develop a system of notification by which DNR pilots can be apprised of when Guard activities are scheduled to be within the same operational airspace. We hope that the long-established cooperation between Hardwood Range and DNR fire control efforts will continue if expansion and/or new MTRs are approved.

6. Recreation Impacts

Impacts to recreational resources due to the training flights are a major concern. Recreational lands seem to fit the definition of "sensitive" lands (page 1-9 of the DOPAA). The proposed routes cross numerous recreational lands in our Western, Southern and North Central Districts. All have high recreational value. Throughout the document it is stated that typical MTR and military operations area (MOA) use will occur between sunrise and sunset. It is logical to assume the heaviest use by reservists will occur on weekends-- the same time the heaviest recreational use of affected lands will occur. We anticipate problems with the aesthetic appeal of these areas when the training flights occur. Low-level flights over these properties should be avoided or the altitude of the flights should be increased.

Specific properties are as follows:

Hardwood Range Restricted Area and Volk South MOA

Adams County: Castle Rock and Petenwell Flowages, White Creek State Fishery Area
 Juneau County: Meadow Valley, Necedah National Wildlife Refuge, Sparta-Elroy State Trail, Castle Rock and Petenwell Flowages, Buckhorn State Park, Mill Bluff State Park, and the proposed Yellow River Bottoms State Natural Area
 Wood County: Wood County State Wildlife Area, Sandhill State Wildlife Area

Southwest Ground Track (also includes those properties associated with the range and Volk South MOA)

Vernon County: Wildcat Mountain State Park, proposed Kickapoo Valley State Reserve
 Crawford County: Rush Creek State Natural Area, Kickapoo State Wildlife Area-Wauzeka Unit, the Lower Wisconsin State Riverway, and Upper Mississippi River Fish and Wildlife Refuge

VR-1616 (also includes those properties associated with the range and Volk South MOA)

Buffalo County: Tiffany Bottoms State Wildlife Area.
 Monroe County: Meadow Valley State Wildlife Area
 Jackson County: Black River State Forest, Jackson County Forest

Southern Ground Track (also includes also properties mentioned above within the southwest ground track and those near the range itself)

Grant County: Lower Wisconsin State Riverway- Woodman-Millville Unit, Mount Hope State Wildlife Area
 LaFayette County: First Capitol State Park, Pecatonica State Trail
 Sauk County: Dell Creek State Wildlife Area

7. Lower Wisconsin State Riverway

The Wisconsin River, downstream from Sauk City to the confluence with the Mississippi River, has been designated a specially protected area of the state. Sections 30.40 to 30.49, Wis. Stats., established strong performance standard protection for the riverway and a separate agency to administer the standards. Over 450,000 people use the river for summer recreation along the longest stretch of free-flowing river in the Midwest. We are very concerned with the potential impacts of low-level flight over and near the riverway to both recreationists, adjacent landowners, and wildlife. Wildlife managers have mapped bald eagle roosting and nesting locations along the river, and such information can be made available during preparation of the EIS. If flights must occur in the vicinity of the riverway, we suggest modifications to flight plans to avoid this sensitive resource.

8. A 700%+ increase in traffic is predicted for the Volk South MOA. The EIS must carefully address impacts associated with an increase of that magnitude. We are concerned about potential impacts in the vicinity of the intersection of VR 1616 and the Volk South MOA. The MTR and MOA merge over eastern Jackson County, an area with a significant amount of public land that receives a great deal of recreational use.

9. Wildlife Impacts

As stated above, without better mapping showing the location of proposed flights, it is difficult to provide information on locations of important habitat for wildlife (including endangered, threatened, and special concern species). We have received the requests for

NHI information for the 16 counties affected by the proposed routes. A meeting between ANG consultants, DNR wildlife and endangered resources staff, and US Fish and Wildlife Service staff may be the best way to identify "sensitive areas" that should be avoided by low-level flights.

Though we lack specific documentation, managers suspect that low-level flights may cause impacts to nesting raptors (including bald eagles) and waterfowl. Waterfowl disturbance has been observed at Necedah Wildlife Refuge and Sandhill State Wildlife Area due to low-level ANG flights. The Upper Mississippi refuge provides one of the most important migration routes in the region for waterfowl, neotropical migrants and raptors. Many of the lands and properties listed above under "recreation" contain federal or state rare, threatened or endangered species. For example, the Sandhill, Meadow Valley, and Wood County Wildlife Areas are sensitive areas that provide important nesting and staging habitat for waterfowl (especially between March 15-May 15 and September 15-November 15 periods) and suitable habitat for such rare species as the Trumpeter Swan, Bald Eagle, Red-shouldered Hawk, Cerulean Warbler, Acadian Flycatcher, Yellow-crowned Night Heron, Greater Prairie Chicken, Blandings Turtle, Wood Turtle and Timber Wolf.

We are very concerned with the affects the flights could have on these species and others and will look for the EIS to identify these areas as "sensitive areas" to be avoided by the flights. Managers at both the state and federal levels have data on nesting locations, rookeries, and migration routes and times.

The DOPAA (page 1-10) indicates that planes will maintain a separation of 1500' from trees important for nesting. The EIS should address how that figure was derived and the noise impacts expected from flights at that level. The EIS must also address the potential for in-air collisions with birds and the associated safety issue for humans and wildlife due to crashes.

9. Air Quality

As was mentioned in the comments on the range expansion, it is important that the EIS address expected air quality impacts associated with MTRs. What types of emissions are expected and what are the resultant human and wildlife impacts? Are there ever instances where fuel of any sort is discharged during flight?

10. Noise

Again, this issue was raised in our comments above and is included in discussion of potential impacts to recreation and wildlife. What are the expected impacts to humans and wildlife associated with the training routes? Comparison to background and other common noise sources should be provided.

11. The description of facilities at Ft. McCoy (Page 2-19) does not appear to be accurate. For instance, a new control tower is proposed for the Sparta-Fort McCoy Airport and the

north impact area has a computerized targeting program and a visual spotting/scoring system (manual). While Ft. McCoy may not be considered a viable alternative, we suggest the ANG consult with the Fort to avoid misrepresentation in the alternatives narrative.

12. Crash Response and Impacts

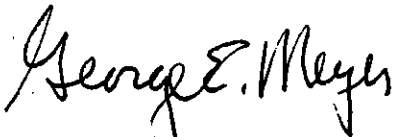
The EIS should explain the likelihood of crashes, especially due to bird/plane air collisions and nearby small aircraft operations and air fields, and the measures that will be taken to address associated impacts of fire, spills, damage to property, emergency response etc.

13. Formal Coordination Mechanism

We recommend establishment of a formal mechanism which will enable identification and resolution of problems should they arise after initiation of new activities. The Department has expressed concerns for years about the effects of low-level flights through VR 1616 in eastern Jackson County, with little success in resolving the problems. A formal process for raising concerns and being assured of action to resolve is needed.

Thank you for the opportunity to comment. We are committed to providing any file information you need to complete a proper evaluation of the impacts of the proposed actions. If you have any questions or have specific data needs, please contact Mr. David Siebert, Bureau of Environmental Analysis and Review, at (608) 264-6048.

Sincerely yours,



George E. Meyer
Secretary

cc: Air National Guard Readiness Center (ANGRC/CEVP)
Major General Jerald Slack- Department of Military Affairs
Janet Smith-US Fish and Wildlife Service
Ben Wopat- US Army Corps of Engineers
Paul Westgaard- Wood County Forestry Department



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Green Bay ES Field Office
1015 Challenger Court
Green Bay, Wisconsin 54311-8331

July 11, 1995

Mr. Jeffrey Weiler
Science and Engineering Associates, Inc.
7918 Jones Branch Drive, Suite 500
McLean, Virginia 22101

Re: Notice of Intent to Prepare
Environmental Impact Statement for
Hardwood Range Expansion and Related
Airspace Actions at Hardwood Range
Wood County, Wisconsin

Dear Mr. Weiler:

This responds to your Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Hardwood Range Expansion in Wood County, Wisconsin and Related Airspace Activities in Wisconsin, Iowa, and Minnesota and your request for Service comments on the proposed project's impacts on federal endangered and threatened species and other sensitive fish and wildlife resources in the vicinity of the project. Following are U.S. Fish and Wildlife (Service) comments relative to the potential expansion and flight impacts to wildlife resources.

Additional comments will be provided in response to any forthcoming environmental impact statement and in response to results of a biological assessment and initiation package regarding endangered species concerns pursuant to Section 7 of the Endangered Species Act of 1973, as amended.

Authority

The Service has responsibility under a number of authorities for conservation and management of fish and wildlife resources. Chief among them are the Fish and Wildlife Coordination Act, Endangered Species Act, Migratory Bird Treaty Act, Eagle Protection Act, and the National Environmental Policy Act. The Fish and Wildlife Coordination Act requires that fish and wildlife resources be given equal consideration in the planning, implementation, and operation of federal and federally-funded, permitted, or licensed water resource developments. The Migratory Bird Treaty Act protects against the taking of bird species which migrate across international and state borders. The Eagle Protection Act specifically protects bald and golden eagles, any parts thereof, and their nests from any taking, which includes kill, harm, and disturbance. Section 7 of the Endangered Species Act outlines procedures for interagency consultations on the effects of federal actions on federally-listed threatened and endangered species. The Service participates in scoping and review of actions significantly affecting the quality of the environment under authority of the National Environmental Policy Act. In addition to these statutes, the Service has authority under several other legislative, regulatory, and executive mandates to promote conservation of fish and wildlife resources for the benefit of the public.

Project Description

The United States Air Force and the Air National Guard (Guard) intend to prepare an Environmental Impact Statement (EIS) to analyze the proposed action regarding the Hardwood Range expansion into Wood County, Wisconsin and modification and/or expansion of related airspace in the states of Iowa, Minnesota, and Wisconsin. This action will be known as the Hardwood EIS.

The Air National Guard proposes to modify the Hardwood Air-to-Surface Gunnery Range located on the northernmost portion of Juneau County near the town of Finley, Wisconsin. This proposed action will expand the land area by approximately 7,230 acres north of the current boundaries into Wood County. A new target area, an area for an aircraft assault strip and a new drop zone is proposed to be developed. The action will provide for multi-directional entry into the range, allowing each unit to accomplish a broader range of training, and helping to reduce the expense incurred in deploying to more distant ranges. This action is also being proposed to enhance operational safety. The proposed expansion would ensure military flights remain over land owned or controlled by the government, further increasing safety for the civilian population near the range. The number of aircraft sorties flown annually would increase from 3,401 to 3,966. Restricted airspace would be modified to include the contiguous new range boundaries to ensure the safety of non-participating aircraft. The action would lower the bottom altitude and expand the lateral confines of the Restricted Airspace 6904B. It would also increase the maximum altitude of R-6904A and R-6904B from 17,000 MSL to 25,000 MSL.

Three stand-alone airspace actions also are being proposed which are independent of the range expansion. The first proposed airspace action will establish six new Military Training Routes (MTRs) south of the range that will encompass two ground tracks. The proposed ground tracks would be oriented predominantly north-south, and extend approximately 200 Nautical Miles (NM) from Hardwood Range. The two ground tracks merge approximately 60 NM south of the range. The location is southwestern Wisconsin and northeastern Iowa. A total of approximately 2,150 flights would be flown annually along the six routes. These MTRs would provide Air National Guard and other military units closer training airspace, allowing the units to accomplish more training on each flight.

The second airspace proposal will increase the number of sorties flown from 185 to 1,340 in the existing Volk South Military Operations Area (MOA). This MOA is located south of Hardwood Range. It is presently used in conjunction with the range and other adjoining airspace for aircraft training sorties. The use of multi-directional entries into Hardwood Range would increase utilization. Also, new weapons and tactics would require increased use of the Volk South MOA in conjunction with adjoining Volk West and Volk East MOAs.

The third airspace action is to reassess Visual Route-1616 for increased utilization. This MTR begins in southeastern Minnesota and traverses easterly in to Hardwood Range. The utilization would increase from 2,187 to 2,423 sorties annually. This increase is expected to satisfy users' training requirements.

Alternatives under consideration include establishing a new air-to-surface gunnery range, using the existing US Army Range at Fort McCoy, closing Hardwood Range and redirecting units to other ranges, and the no-action alternative.

General Comments

The proposed Hardwood Range Expansion and Related Airspace Activities will be in proximity to major migratory waterfowl (ducks, geese, and swans) concentration areas, colonial bird nesting (rookery) sites, and bald eagle nest and wintering sites on and near the Upper Mississippi River National Wildlife and Fish Refuge and Necedah National Wildlife Refuge; the Meadow

Valley, Sandhill, Wood County, Tiffany, and Lower Wisconsin River State Wildlife areas; and the Petenwell and Castle Rock flowages. There is a high potential for bird/aircraft conflicts during migration, nesting, and wintering periods. The areas and altitudes at which aircraft fly during different daily and seasonal periods could play a significant role in preventing these conflicts. Large concentrations of ducks and geese use these wildlife areas in the fall between September 15 and December 15 and in lesser numbers in the spring between March 1 and May 15. Colonial nesting birds; including herons (great blue, black-crowned night, and green), egrets (great, snowy, and cattle), and double-crested cormorants have several rookeries on these wildlife areas. They usually occupy the rookeries between April 15 and July 15. Further, trumpeter swans are being reintroduced into Wisconsin and are breeding and raising their young on the Sandhill State Wildlife Area. Also, trumpeter swans are to be released on Necedah National Wildlife Refuge and adjacent state wildlife areas. The swans nest and rear their broods between April 15 and July 15. There already is a history of aircraft flights adversely impacting swans on Sandhill State Wildlife Area.

Also, bald eagles winter where there is open water, especially below dams along the Mississippi and Wisconsin Rivers. Prime fishing, perching, and roosting sites should be avoided between November 15 and March 15. Flights should not occur in those areas, nor should they approach within 1,320 feet of those areas between the designated time periods.

The altitude at which most ducks, geese, and swans are flying during migration is between 500 and 1,500 feet. Fall migrating waterfowl seem to fly at slightly higher altitudes than spring migrants. Aircraft flights above 2,000 feet would avoid most migratory waterfowl. Aircraft approaching known migratory waterfowl flight corridors should be at or higher than 2,500 feet altitude above ground level to minimize conflicts with migratory birds.

The critical potential disturbance period for nesting bald eagles, ospreys (Wisconsin Threatened Species), and red-shouldered hawks would be February 15 to August 15 when the adults are incubating eggs and raising their young. If the eggs are chilled by cold weather due to the adults being frightened off the nest by low-altitude aircraft flights, hatching success could be diminished. Aircraft flights in the vicinity of eagle, osprey, and hawk nests either should not be allowed or should be maintained at a distance of a quarter mile to avoid disturbance of incubating adults.

Eagle, osprey, and red-shouldered hawk nests are usually constructed near lakes or rivers. Location of the flight corridor to avoid as many lakes and rivers as is possible would minimize conflicts with the existing eagle, osprey, and hawk nest sites and potential future nest sites of gradually expanding eagle and osprey populations in Wisconsin.

Fixed-winged aircraft, if they approach too close, can disturb waterfowl, colonial nesting birds, and nesting raptors, causing them to flush from areas. Impacts from fixed-winged aircraft can be minimized by staying greater than a quarter mile (preferably greater than 2,500 feet) to the side or above known bird concentration sites (rookery, nest, feeding, staging, loafing, and resting). However, rotary-winged aircraft (helicopters) are known to disturb birds (waterfowl) up to 4 or 5 miles away causing them to flush and temporarily leave the area.

On-ground expansion proposals at the Hardwood Range project site may require dredging and/or filling of wetlands. The Corps of Engineers and Wisconsin Department of Natural Resources should be contacted to determine if any permits are required. If permits are required, then steps should be taken to avoid, minimize, and compensate for replacement of unavailable wetland functions and values lost in association with the project.

Fish and Wildlife Resource

We have identified the following environmentally sensitive areas in the vicinity of the Hardwood Range Expansion and Related Airspace Activities which may concentrate waterfowl and terrestrial bird species. In addition, the general location of known bird concentration areas are identified.

Juneau County

1. Necedah National Wildlife Refuge.

Thousands of waterfowl (ducks, geese, and swans) and eagles concentrate on flowages, especially Sprague Mather and Ryneason Flowages in the area south of Finley Road.

Plans have been developed for future reintroduction of trumpeter swans on the refuge's flowages.

Karner blue butterflies are present on the refuge in association with wild blue lupine plants.

Potential establishment of gray wolves in Jackson, Juneau, and Wood Counties is possible as they disperse from northern Wisconsin.

The massasauga rattlesnake, a candidate species for possible future federal listing as threatened or endangered, is found on the refuge.

2. Meadow Valley State Wildlife Area in Juneau, Jackson, and Monroe counties.

This area is managed by the Wisconsin Department of Natural Resources but is owned by the Service. Meadow Valley Flowage has concentrations of waterfowl (ducks and geese) and eagles in pools south of Hog Island in Sections 2, 3, 4, 5, 8, 9, 10, and 11, T. 20 N., R. 2 E. Also, there are several other flowages on this wildlife area which have concentrations of waterfowl.

An eagle nest and territory site on Meadow Valley Flowage is located in the NW 1/4 and SW 1/4 of SE 1/4 of Section 4, T. 20 N., R. 2 E.

Gray wolves are reestablishing in Jackson, Juneau, and Wood counties.

Karner blue butterflies are found on the wildlife area.

3. Yellow River

Red-shouldered hawks are present and nest in bottomland hardwoods along the Yellow River. The red-shouldered hawk is a Wisconsin state-designated threatened species. Also, waterfowl concentrate in the area, especially wood ducks.

4. Wisconsin River, Petenwell Dam and Flowage, and Castle Rock Dam and Flowage in Juneau and Adams counties.

Ducks and geese concentrate on these waterbodies and bald eagles winter along the Wisconsin River below the flowages and dams.

Potential peregrine falcon nesting sites exist along cliffs and bluffs along the Wisconsin River and Petenwell and Castle Rock flowages in Juneau, Adams, and Wood counties.

5. Cranberry farm reservoirs/flowages in the Bear Bluff area west of Meadow Valley State Wildlife Area in Juneau and Jackson counties and City Point area in Jackson County.

Concentrations of ducks and geese occur on these flowages in the fall.

Wood County

1. Sandhill State Wildlife and Demonstration Areas.

Migratory waterfowl concentrate in pools in the fall and spring. Trumpeter swans (Wisconsin Endangered Species) have been reintroduced at this site (Demonstration Area).

2. Yellow River and Hemlock Creek

Red-shouldered hawks and waterfowl (wood ducks) are present.

3. Cranberry farm reservoirs/flowages west of the city of Babcock and northeast of the city of Babcock in the Cranmoor area.

4. Wood County State Wildlife Area

Migratory waterfowl concentrate on pools in spring and fall.

Gray wolves are attempting to reestablish in the southwest corner of Wood, Juneau, and Jackson counties.

Karner blue butterflies are present.

Jackson County

1. General

Gray wolf packs are establishing in Jackson County.

2. Black River State Forest

Flowages and pools concentrate waterfowl in fall and spring.

Bald eagle nests are located in the Black River State Forest and other sites in Jackson County.

Karner blue butterflies are present.

Potential Kirtland warbler habitat (jack pine habitat) occurs in the county.

Several cranberry farm flowages concentrate waterfowl (e.g., Bear Bluff area).

3. Black River

The river is a concentration site of waterfowl.

The Black River is a potential travel corridor used by wolves dispersing from northern Wisconsin into Central Wisconsin through Taylor, Clark, Eau Claire, Jackson, Wood, and Juneau counties.

Monroe County

1. Meadow Valley State Wildlife Area

Waterfowl use the wildlife area flowages.

2. Cranberry farm reservoirs

Waterfowl will use various reservoir areas.

3. Fort McCoy Military Reservation.

Karner blue butterflies are present in substantial numbers.

Adams County

Concentrations of waterfowl occur in spring and fall, as well as eagles in winter, and potential nesting sites for peregrine falcons occur along cliffs of Wisconsin River including Petenwell and Castle Rock flowages.

Karner blue butterflies are present.

Clark County

1. General

Karner blue butterflies are present.

2. Black River Corridor

Waterfowl concentrate on segments of the Black River.

The Black River provides a travel corridor for gray wolves.

Portage, Waushara, Waupaca, and Marquette Counties

Karner blue butterflies are present.

Fassett's locoweed is present in Portage and Waushara Counties.

Pepin, Buffalo, Trempealeau, and Pierce Counties

1. Upper Mississippi River National Wildlife and Fish Refuge - including Mississippi (Lake Pepin) and Chippewa rivers.

The Upper Mississippi River (UMR) is a unique and valuable resource of national significance. It is the only river system in this country that is federally-designated for both commercial navigation (Corps of Engineers 9-foot navigation channel project) and fish and wildlife resources (Upper Mississippi River National Wildlife and Fish Refuge (Refuge)). The Refuge consists of approximately 195,000 acres of wooded islands, sandbars, waters and wetlands extending 284 miles southward along the river bottoms from Read's Landing, Minnesota, to Rock Island, Illinois. Over 270 species of birds, 50 species of mammals, 45 species of amphibians and reptiles, and 113 species of fish occupy the Refuge and habitats along the UMR. The Refuge and UMR are an internationally significant corridor for migratory birds including waterfowl. In addition, both the bald eagle and peregrine falcon use the River habitat corridor for nesting, migration, and wintering. Also, there are large concentrations of diving ducks (canvasback and scaup) along the Mississippi River.

2. Tiffany State Wildlife Area

Similar waterfowl and bald eagle habitat values occur as identified for the Upper Mississippi National Wildlife and Fish Refuge.

The Wildlife Area is designated a Wisconsin State Wild Area.

Crawford, Vernon, Richland, and Sauk Counties

1. Upper Mississippi River National Wildlife and Fish Refuge

Enclosed are maps provided by the McGregor, Iowa District Office of the Refuge which show specific locations of waterfowl concentration sites; bald eagle and red-shouldered hawk nest, roost, feeding, and wintering areas; colonial bird rookery sites and other bird use areas between River Miles 633.0 and 662.0, which are in one of the proposed aircraft flight corridors.

During the peak waterfowl migration, from September 15 to December 15, impressive concentrations of waterfowl occur in the reaches of River Miles 648-659. In the fall of 1994, over 145,000 canvasbacks (one-third of the continental population) and 65,000 lesser scaup utilized lower Pool 9 for over 3 weeks in late November to mid-December. More than 3,500 tundra swans, 16,000 Canada geese and 15,000 mallards also passed through this region. From River Miles 648-655, a sensitive Closed Area exists (see Pool 9 map). This Area is protected all year round due to the unique resources it provides to eagles, waterfowl, rails/bitterns and other migrant and resident species.

Six bald eagle territories are located in the proposed flight plan area including two in upper Pool 10 and four in lower Pool 9. In addition, this area contains several significant roosting areas demarcated on the enclosed maps. During the annual mid-January eagle survey, it is not uncommon to find 300 eagles roosting in trees on the bluffs and wooded Refuge islands within the proposed flight corridor.

Two red-shouldered hawk breeding territories are located in the proposed flight plan area (see Pool 10 map). In Iowa, the hawk is considered an endangered species by the state, and in Wisconsin, a threatened species. Incubating red-shouldered hawks are extremely sensitive to disturbance during March and April.

Within the proposed corridor, a fall raptor migration study was conducted. Fifteen different species of raptors, were sighted totalling 5,280 individuals, including the bald eagle, peregrine falcon, and red-shouldered hawk. The average migration rate was 29.01 raptors per hour. At least a million passerines, rails, bitterns, shorebirds, gulls, neotropical migrants and other bird species also move through the UMR corridor. The migrants are drawn to the UMR's north/south orientation which facilitates spring and fall migrations.

From April throughout the summer months, nearly 3,000 great blue herons, 200 cormorants and 160 egrets are located in two rookeries in Upper Pool 10. These birds travel to adjacent backwater marshes for feeding. Rookeries are extremely sensitive to any source of disturbance. On the Winona District of the Refuge, low-level military flights were conducted below and at 1,000 feet. Shortly after these flights began, nearly an entire heron colony was abandoned, apparently due to the disturbance from the fly-overs. We, therefore, recommend a 2,500-foot minimum altitude in the vicinity of the rookeries (see Pool 10 map).

Even at 2,500 feet, the noise of the jet and bomber engines is significant. Beside noise disturbance, direct collisions are also a

very real concern. Collisions can easily result in the loss of aircraft, pilot, and concomitant collateral damages to civilian property if a heavy bodied bird or several individuals are encountered. Additional safety concerns to consider are the low-level, aerial waterfowl surveys, bald eagle activity and production surveys, and rookery production surveys conducted by the Service. Aerial waterfowl counts occur weekly from October to mid-December. The pilots fly down the UMR through the proposed flight corridor. The bald eagle activity and production surveys occur once during mid-March and once between mid-June to early-July depending on the nesting cycle. Rookery production flights are conducted once during early-May. All survey flights are low-altitude flights that could collide with the Guard's aircraft. In conclusion, for human safety and wildlife protection, the Service recommends a 2,500-foot minimum altitude at a suitable crossing point that would not disturb wildlife. Even at that altitude, selecting an area to traverse the UMR corridor and meet the above criteria could prove to be difficult.

In summary, the following months are critical disturbance periods in various species' life cycles:

January	Migrating eagles and resident breeding eagles.
February	Migrating eagles and resident breeding eagles.
March to April	Resident red-shouldered hawks.
Mid-April to June	Nesting great blue herons, cormorants and egrets.
Mid-September	Start of fall waterfowl and raptor migration.
Mid-November to Mid-December	The Refuge's largest concentrations of divers in lower Pool 9.

It is the Service's perspective, even with a 2,500-foot altitude and designated crossings, that low-level bomber and fighter plane flights are by nature harmful to the natural resources we are mandated by Congress to protect. If you have any questions or need clarification or additional information on this segment of the Mississippi River, please contact Kathleen A. Maycroft at (319)873-3423.

2. Wisconsin River

Petenwell and Castle Rock flowages

The area supports concentrations of waterfowl, bald eagle wintering habitat (roost and feeding areas), and potential nest sites on cliffs for peregrine falcons.

Grant, LaFayette, Iowa, Crawford, and Vernon Counties

Wisconsin River

Lower Wisconsin State River Way - State designated.

Lower Wisconsin River State Wildlife Area (several units)

Bald eagle nests are present in most of the counties associated with the project. These eagle nest sites along with nest sites of osprey, red-shouldered hawk, and peregrine falcon should be identified, placed on a map, and flights altered to stay greater than a quarter mile above and to the side

of these nests.

Federal Threatened and Endangered Species

To facilitate compliance with Section 7(c) of the Federal Endangered Species Act of 1973, as amended, Federal agencies are required to obtain information from the U.S. Fish and Wildlife Service concerning any species, listed or proposed to be listed which may be present in the area of a proposed action. Therefore, we are furnishing you the following list of species which may be present in the concerned area:

<u>Classification</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat</u>	<u>County</u>
endangered	Karner blue butterfly	<u>Lycaeides melissa samuelis</u>	prairie, oak savanna, and jack pine areas w/wild lupine	Adams Clark Jackson Juneau Monroe Wood Marquette Waupaca Waushara Portage
endangered	gray wolf	<u>Canis lupus</u>	northern forested areas	Jackson Juneau Wood
endangered	peregrine falcon	<u>Falco peregrinus</u>	potential breeding - cliffs along Wisconsin and Mississippi Rivers	Adams Buffalo Crawford Grant Iowa Juneau Pepin Pierce Richland Sauk Trempealeau Vernon
endangered	Kirtland's warbler	<u>Dendroica kirtlandii</u>	potential breeding in jack pine - singing males, no nests in Wisconsin	Jackson
endangered	Higgins' eye pearly mussel	<u>Lampsilis higginsii</u>	Lower Wisconsin and Mississippi Rivers	Buffalo Grant Crawford Iowa Pierce Richland Trempealeau Vernon
threatened	bald eagle	<u>Haliaeetus leucocephalus</u>	breeding	Clark Jackson Richland Wood Waushara Portage

			wintering along Mississippi River breeding and wintering along Wisconsin and Mississippi Rivers	Trempealeau Adams Buffalo Crawford Grant Iowa Juneau Pepin Pierce Sauk Vernon Waupaca
threatened	northern monkshood	<u>Aconitum</u> <u>noveboracense</u>	north-facing slopes	Grant Monroe Richland Sauk Vernon
threatened	prairie bush-clover	<u>Lespedeza</u> <u>leptostachya</u>	dry to mesic prairies with gravelly soil	Grant Pierce Sauk
threatened	Fassett's locoweed	<u>Oxytropis</u> <u>campestris</u>	open sandy lakeshores	Portage Waushara
threatened	eastern prairie fringed orchid	<u>Platanthera</u> <u>leucophaea</u>	wet grasslands	Green
category 2 - candidate	eastern massasauga rattlesnake	<u>Sistrurus</u> <u>catenatus</u>	wet and dry prairie	Juneau Wood Adams
category 2 - candidate	phlox flower moth	<u>Schenia indiana</u>	associated with Karner blue butterfly habitat	Juneau Wood Adams
category 2 - candidate	loggerhead shrike	<u>Lanius</u> <u>ludovicianus</u>	associated with Karner blue butterfly habitat	Juneau Wood Adams
category 2 - candidate	Blanding's turtle	<u>Emydoidea</u> <u>blandingi</u>	associated with Karner blue butterfly habitat	Juneau Wood Adams
category 2 - candidate	prairie fame flower	<u>Talinum</u> <u>rugospermum</u>	associated with Karner blue butterfly habitat	Juneau Wood Adams
category 2 - candidate	red-veined prairie leafhopper	<u>Aflexia</u> <u>rubranura</u>	associated with Karner blue butterfly habitat	Juneau, Wood, Adams

category 2 - candidate	tawny crescent butterfly	<u>Phyciodes</u> <u>batesii</u>	associated with Karner blue butterfly habitat	Juneau Wood Adams
category 2 - candidate	trumpeter swan	<u>Cygnus</u> <u>buccinator</u>	deep water marsh	Wood Juneau

There is no designated critical habitat in the project area at this time for any of the species listed in the table above. However, there are bald eagle nest sites in almost all the counties within the overflight area. Conclusions of studies of the effect of low-level flights on the bald eagle vary. It appears that birds respond differently in certain regions of the nation and even birds in the same location respond differently when subjected to the same degree of low-level flights. Therefore, we recommend that flights be prohibited from February 15 to August 15 to prevent adverse impacts on nesting eagles. An alternative to prohibition of flights that should be considered is to prevent aircraft from flying closer than a quarter mile of nest sites. Also, there are eagle wintering sites with feeding and roosting areas present within the flight corridors over the Mississippi and Wisconsin rivers, including the Petenwell and Castle Rock flowages and the Lower Wisconsin River State Wildlife Area. Peregrine falcons have nested along the Mississippi River near the flight corridors and historic nesting sites for falcons are present along the Wisconsin River near where flights will occur. Further, trumpeter swans are present on the Sandhill State Wildlife Area and are proposed for reintroduction onto Necedah National Wildlife Refuge, Wood County State Wildlife Area, and Meadow Valley State Wildlife Area. Also, trumpeter swans may reestablish themselves along the Mississippi River refuge and wildlife areas. This swan species may be impacted by aircraft flight activities.

Several wildlife species may be impacted by the ground activities at the Hardwood Range Expansion site. Three gray wolf packs are currently establishing themselves in central Wisconsin in Jackson, Juneau, and Wood counties and may be impacted by proposed expansion and ongoing activities at Hardwood Range.

The Karner blue butterfly is present on all lands surrounding Hardwood Range and suitable lupine habitat is present within the boundaries of Hardwood Range. The probability of Karner blue butterflies being present on Hardwood Range is very high. Several federal Category 2 - candidate species are associated with Karner blue butterflies and utilize similar habitat. These Category 2 species are eastern massasauga rattlesnake, phlox flower moth, loggerhead shrike, Blanding's turtle, prairie fame flower, red-veined prairie leafhopper, and tawny crescent butterfly. Category 2 species comprise taxa for which information now in possession of the Service indicates that proposing to list them possibly is appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rulemaking. Status surveys for these species will be conducted to determine their status which could lead to their federal listing as threatened or endangered species.

We will need a determination from the Department of the Air Force whether the proposed activity may affect the listed species identified above. That determination would form the conclusion of a biological assessment prepared by the Department of the Air Force. The biological assessment should be completed within 180 days after its initiation and be submitted to the Field Supervisor of the Service's Green Bay Field Office (1015 Challenger Court, Green Bay, WI 54311). When preparing a biological assessment, the following may be considered for inclusion:

1. Result of an on-site inspection of the area affected by the proposed activity or program. This may include a detailed survey of the area to determine if species are present and whether suitable habitat exists either for expanding the existing population or for potential reintroduction of populations.
2. The views of recognized experts on the species at issue, including those within the Service, State conservation departments, universities and others who may have data not yet found in scientific literature.
3. A review of literature and other scientific data to determine the species' distribution, habitat needs and other biological requirements.
4. An analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies.
5. An analysis of alternative actions that may provide conservation measures.

If the biological assessment concludes that federally-listed threatened or endangered species may be adversely affected, the Department of the Air Force would request formal consultation with the Service pursuant to Section 7 of the Endangered Species Act of 1973, as amended.

Section 7(d) of the 1978 Amendment to the Endangered Species Act requires that the Federal agency whose proposed action is under review shall not make any irreversible or irretrievable commitment of resources during the consultation period which in effect would preclude the formulation of implementation of reasonable alternatives to the proposed action.

We suggest that you also contact state natural resources agencies for additional site-specific information on state-designated endangered, threatened, and special status species that may occur in the project area.

Recommendations

We provide the following recommendations for your consideration to avoid potential impacts to wildlife resources:

1. Within all of the counties affected by the project, all of the known nesting and rearing sites (existing, historical, and potential) of bald eagle, osprey, peregrine falcon, red-shouldered hawk, colonial nesting birds, and trumpeter swan should be identified on a map and flights adjusted to avoid them, if possible. If avoidance is not possible, fixed-winged aircraft should stay at least a quarter mile but preferably 2,500 feet above and to the side of known nest sites. Rotary-winged aircraft should stay greater than 5 miles away between February 15 and August 15. This nest location information is available from the Wisconsin Department of Natural Resources (DNR) and the Service.
2. All of the wintering sites including feeding, perching, loafing, and roosting sites for bald eagles should be identified on a map for areas along the Mississippi, Chippewa, and Lower Wisconsin rivers in the project area. Aircraft should stay at least a quarter mile, but preferably 2,500 feet away from the sites between November 15 and March 15.
3. Migratory and winter waterfowl concentration sites on federal, state, county, and private flowages, pools, marshes, lakes, streams, riparian, and wooded habitat should be identified on maps and avoided by fixed-winged aircraft by at least a quarter mile but preferably 2,500 feet. Rotary-winged aircraft should avoid such sites by more than 5 miles.
4. Surveys by qualified biologists for federal and state endangered, threatened, category, and special concern species should be done on the entire

existing and expansion Hardwood Range property.

5. All fixed-winged aircraft and rotary-winged aircraft flights over the Upper Mississippi River National Wildlife and Fish Refuge Districts and the Wisconsin River should not be allowed. If this is not possible, then fixed-winged aircraft flights should be above 2,500 feet above ground level throughout the entire year to avoid impacts to migrating, nesting, feeding, loafing, and roosting waterfowl, eagles, hawks, colonial nesting birds, and other bird species. If it is not possible to stay above 2,500 feet, then fixed-winged aircraft flight routes need to be located at least a quarter mile above and to the side of any of these bird resources. Please contact the Service's Green Bay Field Office to assist in identifying flight route areas with the least impact to birds. If rotary-winged aircraft cannot totally avoid the Refuge, they should not fly closer than 5 miles to any of these bird resources.

6. Flights should be prevented at all times from flying over the area of Necedah National Wildlife Refuge south of Finley Road where large concentrations of ducks, geese, and eagles are present on Sprague Mather and Ryneason flowages. Further, the number of flights should be restricted north of Finley Road between September 15 and November 15 to minimize potential aircraft strikes and disturbances to medium concentrations of ducks and geese located on the center pool of the Meadow Valley Flowage south of Hog Island.

7. No flights should occur prior to 0900 or after 1600 hours during the period of highest waterfowl use since these birds are most active at such times.

8. The use of left traffic should only be used for operations in R-6904.

9. Overflights of the Petenwell and Castle Rock flowages, dams, and Wisconsin River below the dams (approximately 7 nautical miles east of the Hardwood Range target area) should be avoided to prevent disturbance of wintering eagles, potential nest sites of falcons, and waterfowl concentrations.

10. Flights south of Hog Island near the eagle nest territory in the Meadow Valley Flowage should be prohibited during the breeding season between February 15 and August 15. If prohibition of flights is not possible, then flights should not occur closer than a quarter mile, but preferably 2,500 feet, from the nest location.

11. The aircraft flight route should be located to avoid as many lakes, reservoirs, flowages, rivers, creeks, and wetlands as is possible, as birds are likely to be more prevalent in these locations.

12. To avoid potential bird/aircraft strikes during migration periods along low-altitude military flight routes, aircraft should fly above 2,500 feet above ground level.

13. Expansion proposals at the Hardwood Range may require dredging and/or filling of wetlands. The Corps of Engineers and Wisconsin DNR should be contacted to determine if any permits are required. If permits are required, steps should be taken to avoid, minimize, and compensate for replacement of unavoidable wetland functions and values lost in association with the project.

We will provide additional comments on potential impacts of proposed Command flights on migratory birds and federal endangered and threatened species present within the proposed affected area after we have received the Department of the Air Force biological assessment and the draft environmental impact statement.

We look forward to further coordination with you on this proposal. If you have any questions or need additional information, please contact Mr. Ronald Spry of my staff at (414) 433-3803. Further, the Service wishes to participate in any additional meetings to assist in the selection of the best alternatives which protect natural resources and provide for safe military flight training.

Sincerely,



Janet M. Smith
Field Supervisor

Enclosures

cc: Secretary, Wisconsin DNR, Madison, WI
Wisconsin DNR, Madison, WI, Attn: Bureau of Environmental Impact
Terry McKnight, Wisconsin DNR, North Central District, Rhinelander, WI
Wisconsin DNR, Sandhill State Wildlife Area, Babcock, WI
Necedah NWR, Necedah, WI
Upper Mississippi River Wildlife and Fish Refuge, Winona, MN
TCFO, FWS, Bloomington, MN
RIFO, FWS Quad Cities, IL
USEPA, Bill Franz, Chicago, IL



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

April 23, 1997

IN REPLY REFER TO: 1650

Ms. Michele Fikel
Science Applications International Corporation
405 South 8th Street, Suite 301
Boise, ID 83702

SUBJECT: Endangered Resources Information Review (Log Number 97-057)

Dear Ms. Fikel:

The Bureau of Endangered Resources received your request for information on known locations of endangered resources within the potential impact area of the proposed changes to airspace actions associated with the Hardwood Gunnery Range. This information request reflects a modification of the Notice of Intent and Description of Proposed Action and Alternatives for the project that was presented in 1995. It is my understanding that you will use this information in assembling the environmental impact statement for this project. As you know, information on the known locations of endangered resources that may be impacted by the expansion of the Range, as well as guidance on the type of information that will need to be presented to this Bureau in order for the proposed expansion to be adequately assessed, was provided to another consultant working on this project (Johnson, Johnson and Roy).

At your request, I am providing information from the Natural Heritage Inventory (NHI) on the known occurrences of birds, mammals, herptiles and fish recorded in Clark, Eau Claire, Trempealeau, La Crosse, Monroe, Jackson, Wood, Adams, and Juneau counties. The information fields provided include: scientific and common name, Township and Range of occurrence, last observed date, and state and federal protection status. The data are provided in an Excel worksheet. Definitions for the protection status are as follows:

State protection status designated by the Wisconsin DNR.

END = endangered
THR = threatened
SC = Special Concern
RULE = protected or regulated by some other state or federal legislation
NONE = no laws regulating use
PEND = proposed endangered
PTHR = proposed threatened

Federal protection status designated by the U.S. Fish and Wildlife Service.

LE = listed endangered
LT = listed threatened
LELT = listed endangered in part of its range, threatened in a different part

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PE = proposed endangered
PT = proposed threatened
PEPT = proposed endangered in part of its range, threatened in a different part
C1 = candidate, proposed for listing
SC = special concern, under consideration
3A = former candidate, rejected because of presumed extinction
3B = former candidate, rejected because it is considered a synonym or hybrid
3C = former candidate, rejected because it is more common or adequately protected
NONE = no laws regulating use

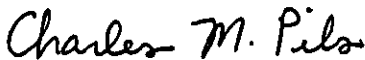
As you may know, gray wolves have established packs in this region of the state. Given their mobility and large geographic range, occurrences of this species are not recorded in the NHI computer database. For the most current information on this species' distribution in the area, please contact Adrian Wydeven, the Bureau's Mammalian Ecologist, at 715/762-3204 ext. 107.

Comprehensive endangered resource surveys have not been completed for the project area. As a result, our data files may be incomplete. The lack of additional known occurrences does not preclude the possibility that other endangered resources may be present.

This letter is for informational purposes and only addresses endangered resource issues. This letter does not constitute Department of Natural Resources authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the Department.

The Bureau looks forward to reviewing your analysis of the proposed project's impacts to endangered resources. Please contact John Pohlman at (608) 264-6263 if you have any questions or need assistance interpreting the NHI data.

Sincerely,



Charles M. Pils
Director, Bureau of Endangered Resources

enclosure

cc: Dave Siebert - SS/6
Adrian Wydeven - NOR/Park Falls
Joel Trick - USFWS-Green Bay, 1015 Challenger Court, Green Bay, WI 54311

jdp:CMP/[erir.ms]msmlhgra.04



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Green Bay ES Field Office
1015 Challenger Court
Green Bay, Wisconsin 54311-8331
Telephone 414/465-7440
FAX 414/465-7410

June 30, 1997

Mr. Harry A. Knudson, Jr.
Chief, Environmental Planning Branch
ANGRC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, Maryland 20762-5157

re: Environmental Impact Statement
Hardwood Range Expansion and
Related Airspace Actions
Multiple Counties in Wisconsin

Dear Mr. Knudson:

The U.S. Fish and Wildlife Service (Service) has received your letter dated May 8, 1997, requesting information to be used in preparation of an Environmental Impact Statement (EIS) on the proposed expansion of the existing Hardwood Air-to-Surface Gunnery Range, and its associated restricted airspace. Your request specifically asked for information on federally-listed threatened and endangered species known from the above-referenced project area. Our comments follow.

Federal Threatened and Endangered Species

For your information, we have enclosed a list of the federally-listed threatened or endangered species known to occur in the counties of your proposed project (enclosure). For more detailed information regarding the specific locations of these species within your project area, we suggest that you contact the Wisconsin Department of Natural Resources. Due to the nature and location of the proposed activities, we conclude that the peregrine falcon, northern monkshood, and Higgins' eye pearly mussel will not be affected. However, the bald eagle, Karner blue butterfly and gray wolf are known from locations within your project area, and may be affected by your proposed project.

We ask that each of the above-referenced species be discussed within the EIS, along with any steps which you intend to take to minimize or avoid adverse affects to listed species. Please provide us copies of the Draft EIS when it is available. We will provide further comments at that time.

We appreciate the opportunity to respond. Questions pertaining to these comments can be directed to Mr. Joel Trick of my staff by calling 414-465-7440.

Sincerely,

Janet M. Smith
Janet M. Smith
Field Supervisor

cc: WDNr, BER, Madison, WI Attn: John Pohlman
WDNR, BEAR, Madison, WI Attn: Dave Siebert
FWS, Fort Snelling, MN Attn: Rick Sayers (ES/T&E)
Volk Field CRTC, Camp Douglas, WI Attn: Dan Gonnering

**FEDERALLY LISTED THREATENED & ENDANGERED SPECIES
IN SELECTED WISCONSIN COUNTIES**

<u>County</u>	<u>Species</u>	<u>Habitat</u>
Adams	bald eagle (BE) peregrine falcon (PF) Karner blue butterfly	Breeding & Wintering (B & W) Potential Breeding (PB) prairie, oak savanna, and jack pine areas w/wild lupine
Clark	BE gray wolf Karner blue butterfly	B northern forested areas prairie, oak savanna, and jack pine areas w/wild lupine
Eau Claire	BE Karner blue butterfly gray wolf	B & W prairie, oak savanna, and jack pine areas w/wild lupine northern forested areas
Jackson	BE Kirtland's warbler 1/ Karner blue butterfly gray wolf	B potential breeding in jack pine prairie, oak savanna, and jack pine areas w/wild lupine northern forested areas
Juneau	BE PF Karner blue butterfly gray wolf	B & W PB prairie, oak savanna, and jack pine areas w/wild lupine northern forested areas
La Crosse	BE PF Higgins' eye pearly mussel	B & W B Miss. River
Monroe	northern monkshood Karner blue butterfly gray wolf	north facing slopes prairie, oak savanna, and jack pine area w/wild lupine northern forested areas
Trempealeau	BE PF Higgins' eye pearly mussel	W PB Miss. River
Wood	BE Karner blue butterfly gray wolf	B prairie, oak savanna, and jack pine areas, w/wild lupine forested areas

1/ Kirtland's warblers are not known to nest in Wisconsin. Singing males only were present in 1978, 1979, 1980, 1988, 1989, 1990, 1991, 1992, 1996 and 1997.

Listed species

(E) = Endangered
 (T) = Threatened
 (B) = Breeding
 (W) = Wintering
 (PB) = Potential Breeding

bald eagle (T)
 peregrine falcon (E)
 Kirtland's warbler (E)
 gray wolf (E)
 Karner blue butterfly (E)
 Higgins' eye pearly mussel (E)
 northern monkshood (T)

Haliaeetus leucocephalus
Falco peregrinus
Dendroica kirtlandii
Canis lupus
Lycaeides melissa samuelis
Lampsilis Higginsi
Aconitum noveboracense



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April 10, 1998

Mr. Dick Masse
Natural Resources Program Manager
ANG/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20762-5157

re: Hardwood Range Expansion and
Associated Airspace Actions
Central Wisconsin

Dear Mr. Masse:

This letter is a follow-up to a meeting held on February 25, 1998, at the Necedah National Wildlife Refuge (NWR) near Necedah, Wisconsin. During that meeting, representatives of the U.S. Fish and Wildlife Service (Service) and the Combat Readiness Training Center, Volk Field Air National Guard Base discussed with you a variety of issues related to the Hardwood Range Expansion Project proposed by the Air National Guard (ANG). The purpose of this letter is to summarize what was discussed at that meeting, to indicate what steps should be taken to resolve conflicts with Necedah NWR regarding overflight concerns, and to outline the necessary procedures to satisfy the requirements of the Endangered Species Act of 1973, as amended.

As previously discussed in our comments on the Draft Environmental Impact Statement (DEIS) for this project, Service concerns include potential adverse impacts to wetlands, fish and wildlife habitat losses, and endangered species. Endangered species potentially impacted by this project include the bald eagle (Haliaeetus leucocephalus), gray wolf (Canis lupus), and Karner blue butterfly (Lycaeides melissa samuelis). The Service also has significant concerns regarding the effects of low-level overflights on wildlife resources and recreational experiences on the adjacent Necedah NWR.

As we discussed at the February 25th meeting, we are currently unable to determine the level of impacts to fish and wildlife habitat which would result from the land disturbance associated with expansion of existing ground-based facilities, or the impacts to federally-listed threatened and endangered species. We will provide comments on the effects to fish and wildlife habitat resulting from this project following review of more detailed project plans, and the Integrated Land Use Management Plan you propose to prepare. Additional comments may also be provided during review of a U.S. Army Corps of Engineers permit application for any proposed wetland fills or modifications.

Possible effects on the bald eagle, gray wolf, and Karner blue butterfly will be evaluated upon receipt of more detailed plans for development of the proposed Hardwood Range expansion. We hope to continue coordination with you to allow for a project design which will avoid adverse effects to listed species. If it is determined that the project, as proposed, may affect federally-listed species, formal consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act), will be necessary.

One of the most controversial subjects related to this project has been the issue of low-level overflights of military aircraft over National Wildlife Refuge lands. During our discussions on February 25th, we attempted to identify all of the important parameters associated with this issue, and began the process of resolving the existing conflicts between ANG activities and affected resources on Necedah NWR lands.

Existing overflight guidelines used by the ANG consist of a series of zones over the refuge, with currently allowable aircraft altitudes varying from no restrictions in the northernmost zone (Zone 1), to a general guideline of 2000 feet above mean sea level (MSL) for the two southern zones (Zones 2 and 3). As the local ground elevation is approximately 900 feet above MSL, this altitude translates to an approximate elevations of 1100 feet above ground level. In addition, the southernmost zone (Zone 3) has an additional restriction to 3000 MSL for the period from September 15 through November 30, to allow for protection of migratory bird concentrations during critical staging periods.

Current opinion among Necedah NWR staff is that these elevations and restricted time periods are insufficient to provide the level of protection they would like to have in place. The current elevations and restrictions were negotiated at a time when flights were all subsonic, less frequent, and produced lower decibel readings. The level of disturbance has increased in recent years, and could greatly multiply if the Hardwood Range Expansion Project is implemented. In addition, Necedah NWR staff have repeatedly observed overflights by pilots who apparently do not adhere to existing guidelines. Refuge staff believe that even when these guidelines are followed, overflights at the allowable elevations have adverse affects on waterfowl and other wildlife, as well as on the quality of the recreational experience of individuals using Refuge lands.


While the current guidelines allow for seasonal protections during the fall migration period, additional protective measures may also be appropriate for bird concentrations present on Necedah NWR during spring migration periods. In addition, the rapid rise in the availability and popularity of wild turkey hunting has greatly increased recreational opportunities on some areas of the refuge during the spring hunting periods for this species. Therefore, we would like to explore the potential for extending the protective measures already in place to provide protection to migratory birds during the spring migration periods, and explore which areas of Necedah NWR may be appropriate for additional protections, to allow for a more quality experience for refuge users who are afield during the spring, such as turkey hunters.

The changes that have occurred on Necedah NWR lands over the previous decade now require that the existing informal agreement between the ANR and Necedah NWR be re-examined, with the hope of drafting a Memorandum of Agreement (MOA) to help resolve these issues. We have scheduled a meeting for the afternoon

of April 15, 1998, during which we expect to discuss these issues with Lt. Col. Larry Young, Director of Operations for the Combat Readiness Training Center. We hope to eventually reach agreement over the appropriate altitudes of overflights over Necedah NWR, and possibly the expansion of sensitive areas and time periods. In addition, we hope to be able to institute a system that will allow for greater communication with the pilots who use this facility, and a method of resolving any future conflicts which may arise.

Our meeting of February 25th left us optimistic that we can resolve differences between the sometimes conflicting goals of the ANG and Necedah NWR. We appreciate your involvement in this process, and recognize the efforts of Lt. Col. Young and yourself to attempt to resolve these conflicts. If you have any questions pertaining to these comments, please call me at 920-465-7440, or Mr. Joel Trick of my staff at 920-465-7416.

Sincerely,



Janet M. Smith
Field Supervisor

cc: FWS, Necedah NWR, Necedah, WI Attn: Larry Wargowski
FWS, Fort Snelling, MN (ES/HC) Attn: Lyn MacLean
CRTC, Camp Douglas, WI Attn: Lt. Col. Larry Young
CRTC, Camp Douglas, WI Attn: Maj. Dave Beck
WDNR, BSS, Madison, WI Attn: Dave Siebert
WDNR, BER, Madison, WI Attn: John Pohlman



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November 9, 1999

Mr. Dick Masse
Natural Resources Program Manager
ANG/CEVP
3500 Fetchet Ave.
Andrews Air Force Base, Maryland 20762-5157

Re: Hardwood Range Expansion
and Associated Airspace Actions
Juneau and Wood Counties, WI

Dear Mr. Masse:

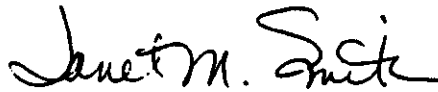
The purpose of this letter is to further clarify comments provided by the U.S. Fish and Wildlife Service (Service) in our April 10, 1998 letter and during ensuing discussions. The Service indicated during a meeting held at the Hardwood Range complex in February of 1998, and subsequently, that we are unable to determine the level of impacts to fish and wildlife habitat or federally-listed threatened or endangered species that could result from land disturbance associated with expansion of the Hardwood Range as proposed by the Air National Guard (ANG) in the Environmental Impact Statement (EIS) for the subject project. Pertinent information needed to make such determinations will not be available until after a decision is made whether to proceed with the project, and which project features will be approved for detailed project planning.

Accordingly, we agree it is premature to prepare a biological assessment (BA) at this time to determine whether a federally-listed threatened or endangered species may be adversely affected by the proposed project. We ask that you contact us to resume consultation in the event a decision is made to proceed with land acquisition and development. When detailed plans are available regarding specific impacts on the property, we may recommend preparation of a BA. If a BA concludes that a federally-listed threatened or endangered species may be adversely affected, formal consultation should be initiated with the Service pursuant to section 7 of the Endangered Species Act of 1973, as amended.

The Service remains optimistic that we can further discuss and resolve any issues that may arise as a result of the ANG's proposed actions. We appreciate your continued involvement in this

process and encourage you to keep this office informed of further developments if the project proceeds. If you have any questions regarding this subject, please contact Mr. Joel Trick of my staff at 920-465-7416.

Sincerely,

A handwritten signature in black ink, appearing to read "Janet M. Smith". The signature is fluid and cursive, with the first name "Janet" and last name "Smith" clearly legible, and "M." in the middle.

Janet M. Smith
Field Supervisor

APPENDIX H
OTHER IICEP CORRESPONDENCE



State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

February 6, 1995

In reply please refer to:
RC#: 950200066

Hardwood EIS
c/o Mr. Jeffrey Weiler
Science and Engineering Associates, Inc.
7918 Jones Branch Drive, Suite 500
McLean, VA 22101

RE: DoD/AIR FORCE/ANGRC - ALLAMAKEE, CLAYTON, DELAWARE,
BUCHANAN, LINN, AND BENTON COUNTIES, IOWA - HARDWOOD EIS AIR TO
SURFACE GUNNERY RANGE EXPANSION, JUNEAU COUNTY, WISCONSIN WITH
CHANGES TO AIRSPACE IN WISCONSIN, IOWA AND MINNESOTA

Dear Mr. Weiler,

We have received and reviewed the information you submitted to our office concerning the above referenced project. Based on your project description and a review of our records and maps, we make the following comments and recommendations.

Because the proposed project involves only changes to airspace use within the State of Iowa, potential adverse effects to most archeological sites and historic structures should be minimal. However, the proposed Southwestern MTR corridor does pass over Effigy Mounds National Monument located in Allamakee and Clayton Counties, Iowa. This large site includes almost 200 mounds along with other archeological resources. It attracts numerous visitors and is a site of national importance. This national monument was established in 1949 and has been enlarged since then. The character of this property is such that it is extremely susceptible to intrusion by various impacts, including visual and noise impacts. We recommend that you initiate correspondence with Effigy Mounds National Monument by contacting in order to determine how this property might be affected and whether avoidance or mitigation might be appropriate:

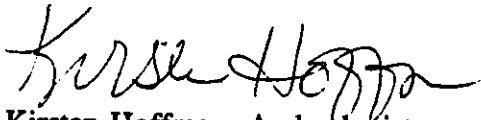
Mr. Thomas Munson
U.S. Department of the Interior
National Park Service
Effigy Mounds National Monument
R.R. 1, Box 25A
Harpers Ferry, IA 52146
(319) 873-2356

H-1

The proposed Southwestern MTR corridor could also affect standing structures on or eligible for the National Register of Historic Places in Iowa. However, the specific properties that might be affected by airspace use modifications and the ways in which these properties might be impacted are extremely difficult to determine with any certainty. Because of this and because the modifications in airspace use associated with the proposed project are not extreme, we are making no recommendations for archeological, historical, or architectural survey at this time.

Should you have any further questions or if this office can be of further assistance to you, please contact the Review and Compliance program at (515) 281-8743.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kirsten Hoffman".

Kirsten Hoffman, Archeologist
Community Programs Bureau
(515) 281-4358

cc: Thomas Munson, Superintendent, Effigy Mounds National Monument



AIRCRAFT OWNERS AND PILOTS ASSOCIATION

421 Aviation Way • Frederick, MD 21701-4798
Telephone (301) 695-2000 • FAX (301) 695-2375

February 21, 1994

Air National Guard Readiness Center
Environmental Division
3500 Fetched Avenue
Andrews Air Force Base, MD 20331

Gentlemen:

This letter is in response to the Notice of Intent to Prepare an Environmental Impact Statement for the Hardwood Range Expansion and Related Airspace Actions, Hardwood Range, Wood County, Wisconsin. The Aircraft Owners and Pilots Association (AOPA) is specifically opposed to the creation of six new Military Training Routes (MTRs) south of the Hardwood Range. In our view the creation of these MTRs will severely impact general aviation in Iowa and Wisconsin.

Our primary concern is the safety of Visual Flight Rule (VFR) operations in the effected areas. The Federal Aviation Administration (FAA) encourages pilots operating VFR to follow rivers, major highways, powerlines, or other landmarks. According to the FAA's Statistical Handbook of Aviation there are currently 18,394 active pilots in Iowa and Wisconsin. Many of these pilots, and others from surrounding states navigate VFR using the rivers and highways that cross through the proposed MTRs.

The proposed MTRs cross large portions of the Mississippi and Wisconsin Rivers, Interstate 380 in Iowa, and Interstate 90 in Wisconsin. The width of these MTRs ranges from 5 to 20 nautical miles and the vertical limits extend from 300 to 5,000 feet AGL. Additionally, the mandatory criteria listed in the Description of the Proposed Action and Alternatives (DOPAA) states the proposed MTRs must be available for use at least eight hours per day to accommodate a total of 2,151 flights annually. The spacial dimensions of this airspace combined with military aircraft engaging in low altitude navigation, low altitude step down training and surface attack tactics training, will create a significant concentration of high speed military traffic that does not currently exist and will endanger general aviation aircraft trying to transit the area.

Air National Guard Readiness Center

Page 2

February 21, 1995

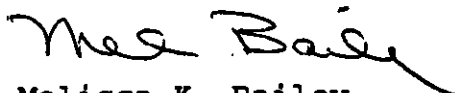
In addition to the above flyways, a multitude of Victor routes cross the proposed MTRs. These fixed routes have been established by the FAA for air navigation purposes and are generally predicated solely on VOR or VORTAC navigation aids. In Iowa alone the following Victor routes are negatively effected; V67 between Waterloo and Cedar Rapids, V100 between Dubuque and Waterloo, V158 between Dubuque and Mason City, and V246 between Dubuque and Waukon Vortac. The proposed MTRs will create a barrier to the safe and efficient use of these established Victor routes.

While the FAA does not keep statistics concerning the amount of air traffic transiting these routes, there are statistics that point to the level of activity occurring at airports within the vicinity of the proposed MTRs. The FAA Air Traffic Activity Survey for 1992 shows that Waterloo, Cedar Rapids, and Dubuque airports facilitated a combined total of 206,041 operations. These operations only represent small portion of the number of aviation operations that occurred in the area of the proposed MTRs. There are numerous non-towered airports scattered throughout the area that supported an undetermined number of operations.

AOPA recognizes the importance of providing the military services sufficient military airspace to maintain a high level of preparedness. However, we believe that the military's legitimate needs can be met without unnecessarily endangering civilian air traffic and for the above reasons AOPA is opposed to the establishment of the proposed MTRs.

Thank you for the opportunity to respond to this proposal.

Sincerely,



Melissa K. Bailey
Director
Airspace and System Standards
Regulatory Policy



MINNESOTA HISTORICAL SOCIETY

February 23, 1995

Mr. David C. Van Gasbeck
Department of the Air Force
Environmental Planning Branch
Air National Guard Readiness Center
3500 Fetchet Avenue
Andrews Air Force Base, Maryland 20331

Dear Mr. Van Gasbeck:

Re: Hardwood Range expansion and related airspace actions
Minnesota
SHPO Number: 95-1310

Thank you for contacting our office during the planning stages for the above referenced project.

Your review submittal indicates that this project could affect cultural resources in the range expansion area and in the airspace components. We concur with this determination.

The point of contact in our office for obtaining information about previous surveys, inventoried properties, and National Register listed and eligible properties is Homer Hruby, Inventory Coordinator. He can be reached at 612-296-5434.

We look forward to working with you on the review of this proposal. If you have any questions regarding our review, please contact our Review and Compliance Section at 612-296-5462.

Sincerely,

Dennis A. Gimmetstad
Government Programs and Compliance Officer

DAG:dmb

cc: Homer Hruby, MnSHPO

CPT 0150-

County of Wood \ OFFICE OF COUNTY BOARD CHAIRMAN

Courthouse-400 Market St.
P. O. Box 8095
Wisconsin Rapids, WI 54495
Telephone: (715) 421-8410
FAX: (715) 421-8808

February 24, 1995

James A. McMurry, LTC, WI ANG Comm.
Wisconsin Air National Guard
Camp Douglas, WI 54618

Dear Colonel McMurry:

Your letter of February 17th was received.

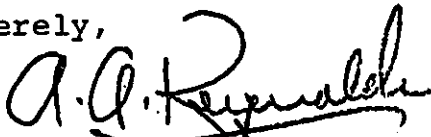
Your suggestion relative to a tour of Volk Field and Hardwood Range by the Wood County Board is a good one. I will be away for a few weeks, but on my return we can talk about the tour and possibly arrive at a mutually acceptable date.

We do want to maintain an open dialogue with you throughout the process. At our Board meeting last Tuesday, we passed two resolutions which present the Boards concerns about the project. You should know that the Board passed these resolutions by a unanimous vote. I am enclosing copies of the two resolutions as well as a copy of our statement for the environmental impact process; this for your information.

In reading through the enclosed, you will see that Wood County has many major concerns. The benefits to our County, if any, are hard to discern.

Thank you for your letter and be assured that we will be in touch with you before too long.

Sincerely,



A.A. Reynolds, Chairman
WOOD COUNTY BOARD OF SUPERVISORS

County of Wood

Courthouse - 400 Market St.
P. O. Box 8095
Wisconsin Rapids, WI 54485-8095

February 22, 1995

Program Manager, Hardwood EIS
Air National Guard Readiness Center
ANGRC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20331-5157

Hardwood EIS
c/o Mr. Jeffrey Weiler
Science and Engineering Associates, Inc.
7918 Jones Branch Drive, Suite 500
McLean, VA 22101

Re: Request for Comments Concerning Environmental Effects of the
Proposed Air National Guard Hardwood Range Expansion.

Dear Sir or Madam:

Wood County is genuinely interested in being involved in every step associated with the proposed expansion of the Hardwood Bombing Range. The County owns approximately 6,162 acres of property in the expansion area, which is no small part of our county forest program.

The county forest is managed so as to provide a sustained yield of forest products that will last indefinitely. The property is also managed to provide abundant opportunity for recreation such as hunting, fishing, trapping and berry picking. Non-consumptive uses of the forest are also very popular. These include such things as bird and nature watching, skiing, snowshoeing, snowmobiling and hiking, which are also important to many people. With this as an introduction, you can see that this property is not only important to Wood County in terms of dollars and cents but also for its abundant natural resources that are made readily available to the residents of Wood County and the entire state.

In preparing an environmental assessment there are many areas that will require thorough review. One question that must first be answered is, "Under what mechanism would the Air National Guard (ANG) operate on the property?" Would the ANG purchase the property from the County or would a lease or easement be negotiated? What will the ANG do if the County or private

individuals do not wish to give up their property? Could alternate properties be purchased for trade to the county? In any case, if the public does not have full access to the County property, it will be necessary to withdraw the property from the County Forest Program (ch. 28.11 of the state statutes). This is an assumption that will be carried throughout our discussion of environmental concerns.

The following should be discussed in the environmental impact statement:

1. Affects on Public Recreation

- A. Hunting, fishing and trapping - This property has abundant populations of white tailed deer, ruffed grouse, woodcock, wild turkey, cottontail rabbits, squirrels, raccoons and beavers. Other huntable or trapable species include snowshoe hares, coyotes, various ducks, Canada Geese, beavers, muskrats, mink, fox and otter.
- B. Bird watching, nature hiking, snowshoeing, cross county skiing, and site seeing - The area involved in the proposed bombing range provides many people with the opportunity to experience nature in a non-consumptive way. Because the large block of timber is accessible by town and county forest roads, the area is used heavily to view nature in general. In addition to the animals previously listed, the following partial list of animals are found on this property: Porcupine, Opossum, Sandhill Cranes, American Bittern, Sora Rails, Green Herons, Black Terns, Great Blue Herons, Bald Eagles and other birds of prey, reptiles, amphibians and invertebrates.
- C. Local public recreation areas - What effect would the loss of land, accessible to the general public, have on other recreational properties nearby? Some of these are: Dexter Park, Country Aire Park, Wood County State Wildlife Area, Sandhill State Wildlife Area, Meadow Valley Wildlife Area, and the Necedah National Wildlife Refuge.
- D. Snowmobile trail - The Yellow River Rider Snowmobile Club has a trail that goes through the expansion area. What will be done to accommodate the trail?

2. Wildlife

What will be the effects of this action on nesting, feeding, and breeding habits of wildlife?

3. Fish

What effects will the construction and maintenance of this facility have on the fish population? What fish species are present on or below the project site?

4. Forestry

In 1992, it was estimated that there was over \$500,000 worth of merchantable timber on this portion of the county forest. This was a conservative figure then and due to increased stumpage value and forest ingrowth, the merchantable timber value should be significantly greater at this time. In addition to this there is 1,000 acres of immature timber that will become merchantable. This is a very important resource to the county for current and especially future revenue. How much damage would be done to the existing timber during construction and operation of the range? Who would have the timber rights? What limitations would be placed on access for harvest? If access is limited, how will that affect timber stumpage values.

5. Rare, Endangered and Threatened Species

There are several rare, endangered and threatened species that may be present on this property. A practical list includes: Karner Blue Butterfly, Eastern Massasauga Rattle Snake, Wood Turtles, Blandings Turtle and the Red Shoulder Hawk.

6. Wetlands

This portion of the county forest is located in the bed of the glacial Lake Wisconsin. There are large areas of wetlands throughout the expansion area. What effect will the construction of the facility have on the wetlands? What type of wetlands are there in the proposed area, and how large are they? What types of material (i.e. petroleum products, lead, radioactive, etc.) could potentially end up in the ground water?

7. Forest Fire Protection

From 1987 to May, 1992 there were four fires, associated with the bombing range, that were not on land controlled by the ANG. These have only burned approximately three acres but they demonstrate the potential fire risk. The loss of unrestricted air space and access to the town and forest roads could increase any future loss of property to fire damage.

Please address the increased fire risk and how it will be dealt with.

8. Agriculture

- A. Surface water - The local cranberry growers rely on the ditches located in the expansion area to supply water and to drain water as needed. What will be done to maintain these ditches?
- B. What affect will any new restrictions have on crop dusting?

9. Noise

A study of the potential noise levels and their effects should be completed. If the range is expanded there would be potential growth in its use at a later date. This should be considered in the analysis.

10. Economic Affects Due to Loss of County Forest

How would the loss of the county forest affect the local economy? How would the ANG remedy these losses?

Areas of immediate concern:

A. To the towns:

- 1. Loss of county forest severance tax (10 percent of the County's gross timber sales).
- 2. Loss of state payment in lieu of taxes (\$.30 per acre of County Forest).
- 3. If the town roads are closed there would be a loss of town roads aids (\$1,100 per mile).
- 4. The effects on the towns equalized value, as it relates to school aids and state aid formulas.
- 5. Tourism loss due to loss of recreation property.

B. To the County:

- 1. County Forest timber sale revenue.
 - a) Reduced quality of timber due to bombing, etc.

- b) Loss of competitive timber bids due to restrictions on cutting, access problems and fear of being injured.
 - c) or, loss of timber rights.
- 2. County Forest road aid payments (\$200.00 per mile).
- 3. Reduction of forestry fund account receipts (variable acreage payments and project loans).
- 4. Wildlife Habitat and County Conservation Aid payments.
- 5. Potential reduction of Dexter Park use.
- 6. Tourism loss due to loss of recreation property.
- 7. Forestry Fund Account liability to the state.
- C. Local private business relying on tourism associated with hunting, trapping, fishing, etc. What would be the net effect to these industries?
- D. Air traffic - how would the expansion effect the Wisconsin Rapids airport and local landing strips?
- E. Jobs - In Wood County, timber related industries are the number one employer. How would the expansion affect these industries?

11. Alternatives

The DOPAA lacks review of sufficient alternatives and it appeared that alternatives reviewed were not thoroughly examined.

- 12. The Wood County Board of Supervisors recognizes the federal power of eminent domain over the county and, in an effort to minimize the negative effect that would occur due to the expansion, requests the Air National Guard to also consider the following land ownership alternatives and the resulting actions listed, in their Environmental Impact Statement scoping process:

- 1. Outright purchase of the property with and without the timber rights and mineral rights.

20

RESOLUTION# 95-2-9

ITEM # 31-2
DATE February 21, 1995
Effective Date February 21, 1995

Introduced by Volk Field Ad Hoc Committee

	NO	YES	A
1 Schreiner, L.		✓	
2 Stargardt, G.		✓	
3 Reynolds, A.		✓	
4 Schneider, G.		✓	
5 Draves, D.		✓	
6 Josephson, K.		✓	
7 Schulhauser, D.		✓	
8 Reigel, L.		✓	
9 Jirschle, M.		✓	
10 Zimmermann, K.		✓	
11 Brey, A.		✓	
12 Boehning, B.		✓	
13 Lang, G.		✓	
14 Gardner, W.		✓	
15 Voight, R.		✓	
16 Raubal, J.		✓	
17 Kumm, A.		✓	
18 Molepske, C.		✓	
19 Bowden, C.		✓	
20 Koran, J.		✓	
21 Hofmeister, N.		✓	
22 Wynyard, M.		✓	
23 Feih, D.		✓	
24 Hokamp, M.		✓	
25 Falkosky, C.		✓	
26 Conrad, J.		✓	
27 Bailey-Gokev, F.		✓	
28 Kronstedt, H.		✓	
29 Guth, L.		✓	
30 Brehm, R.		✓	
31 Goodness, W.		✓	
32 Gurtler, C.		✓	
33 Rosandick, L.		✓	
34 Braun, R.		✓	
35 Dove, J.		✓	
36 Castell, B.		✓	
37 Nash, J.		✓	
38 Matthews, C.		✓	

INTENT & SYNOPSIS:

To have Wood County go on record in strong opposition to the expansion of the Hardwood Bombing Range into Wood County.

FISCAL NOTE:

Unknown; varied adverse economic impact to the County, townships, and local residents should the Hardwood Bombing Range Expansion plan proceed.

Source of Money: Contingency ☐ Budget ☐

WHEREAS, the Air National Guard (ANG) proposes to expand the Hardwood Bombing and Gunnery Range, into Wood County, to the extent of 7,139 acres, and

WHEREAS, approximately 6,162 acres of the proposed expansion would be Wood County Forest Land, which would require a withdrawal of the property from the County Forest Program, and

WHEREAS, approximately 977 acres of the proposed expansion would be on private property, which would result in a loss of tax base for both Wood County and the towns of Remington and Port Edwards, and

WHEREAS, the Volk Field Ad Hoc Committee (Committee) has met on numerous occasions over a number of years with representatives of the ANG and have now reviewed the "Description of the Proposed Action and Alternatives" (DOPAA) for the

Number of Votes Required: Majority
have identified the following as some (but not all of the) concerns and negative effects associated with the proposed expansion:

The loss of County forest property and the associated benefits to the public, including: hunting, fishing, berry picking and non-consumptive uses.

Additional land may be needed for future expansions of the Hardwood Bombing Range.

The difficulty in finding and acquiring replacement County forest property.

(Continued)

Clifford Bowden
Bob Gokev
Don J. ...
Robert K. ...
Bernard Castell
Adopted by the County Board of Wood County, this 21st day of February 1995
[Signature] County Clerk
[Signature] Board Chairman

Item # _____
Date 2/21/95
Effective Date 2/21/95

Intent: To have Wood County go on record in strong opposition to the expansion of the Hardwood Bombing Range into Wood County.

Page two

Additional air space restrictions to private and commercial aviation that will be attendant to the proposed expansion.

The increased level of noise pollution and the vastly expanded area over which the noise pollution will be experienced.

The potential environmental damage to land in Wood County.

The lack of sufficient alternatives reviewed in the DOPAA and the appearance that the alternatives reviewed were not thoroughly examined.

The adverse economic impact to the towns of Port Edwards and Remington due to the loss of County Forest Severance Tax (10% of the County's gross timber sales) and the loss of state payments in lieu of taxes to the towns (30¢ per acre of County forests).

The adverse economic impact to Wood County if the forest land proposed to be taken by the ANG is not replaced:

the loss of County forest timber sale revenue,

the pro-rata reduction of the availability of no-interest loans from the State,

the reduction of Wildlife Habitat and County Conservation Aid grants,

the Forestry Fund Account liability to the state,

the loss of tourism due to the loss of the recreational use of the property.

The adverse economic impact to Wood County if the land proposed to be taken by the ANG is replaced by Wood County includes the loss of taxable property.

WHEREAS, the Committee can discern no advantage to Wood County should the proposed Hardwood Bombing Range expansion come to fruition, and

WHEREAS, legal expertise in the area of issues concerning the National Environmental Protection Act may be needed if the ANG determines to proceed with the expansion of the Hardwood Bombing Range.

NOW, THEREFORE, IT IS HEREBY RESOLVED BY THE WOOD COUNTY BOARD OF SUPERVISORS THAT they go on record as being adamantly opposed to the expansion of the Hardwood Bombing Range into Wood County.

✓ BE IT FURTHER RESOLVED THAT the Wood County Clerk is authorized and directed to forward a copy of this resolution to Wood County's State and Federal representatives as well as the ANG.

✓ BE IT FURTHER RESOLVED THAT the Wood County Corporation Counsel is authorized to locate expert legal counsel in the area of issues concerning the National Environmental Protection Act.

(21)

RESOLUTION# 95-2-10

ITEM # 31-3
DATE February 21, 1995
Effective Date February 21, 1995

Introduced by Volk Field Ad Hoc

Committee

	NO	YES	A
1 Schreiner, L.		✓	
2 Stargardt, G.		✓	
3 Reynolds, A.		✓	
4 Schneider, G.		✓	
5 Draves, D.		✓	
6 Josephson, K.		✓	
7 Schulhauser, D.		✓	
8 Reigel, L.		✓	
9 Jirschele, M.		✓	
10 Zimmermann, K.		✓	
11 Brey, A.		✓	
12 Boehning, B.		✓	
13 Lang, G.		✓	
14 Gardner, W.		✓	
15 Voight, R.		✓	
16 Raubal, J.		✓	
17 Kumm, A.		✓	
18 Molepske, C.		✓	
19 Bowden, C.		✓	
20 Koran, J.		✓	
21 Hofmeister, N.		✓	
22 Wynsaard, M.		✓	
23 Feih, D.		✓	
24 Hokamp, M.		✓	
25 Falkosky, C.		✓	
26 Conradt, J.		✓	
27 Bailey-Gokey, F.		✓	
28 Kronstedt, H.		✓	
29 Guth, L.		✓	
30 Brehm, R.		✓	
31 Goodness, W.		✓	
32 Gurtler, C.		✓	
33 Rosandick, L.		✓	
34 Braun, R.		✓	
35 Dove, J.		✓	
36 Castell, B.		✓	
37 Nash, J.		✓	
38 Matthews, C.		✓	

INTENT & SYNOPSIS:

To express the County's concerns with respect to the proposed Hardwood Bombing Range expansion so that these concerns may be addressed in the Environmental Impact Statement, Social Economic Study and other studies being conducted.

FISCAL NOTE:

The Environmental Impact Statement, Social Economic Study and other studies by and for the Air National Guard (ANG) will be conducted at no cost to Wood County.

Source of Money:

Contingency ☐Budget ☐

WHEREAS, the ANG proposes to expand the Hardwood Bombing and Gunnery Range, into Wood County, to the extent of 7,139 acres, and

WHEREAS, approximately 6,162 acres of the proposed expansion would be Wood County Forest Land, which would require a withdrawal of the property from the County Forest Program, and

WHEREAS, the ANG has begun the process of drafting an EIS and other studies which will outline the scope of issues to be addressed relative to overall impact from the proposed Hardwood Range expansion, and

WHEREAS, some of the concerns of Wood County with respect to the proposed Hardwood Bombing Range expansion have been set forth in the attached letter to the ANG.

PAK
No: 0 Yes: 34 Absent: 4
Number of Votes Required: Majority

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE WOOD COUNTY BOARD OF SUPERVISORS THAT they authorize and direct the Wood County Board Chairman and Clerk to sign the attached letter to the Air National Guard and to send a copy of said letter to Wood County's State and Federal representatives.

Clifford Brundage
R.D. Brundage
David S. Brundage
Joseph K. Brundage
Bernard Castell

Adopted by the County Board of Wood County, this 21st day of February 1995

County Clerk

County Board Chairman



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Milwaukee District Office
P.O. Box 631
Milwaukee, Wisconsin 53201-0631

TAKE
PRIDE IN
AMERICA

IN REPLY REFER TO:

030:TS
1790

MAR 10 1995

Hardwood EIS
c/o Mr. Jeffrey Weiler
Science and Engineering Associates, Inc.
7918 Jones Branch Drive, Suite 500
McLean, Virginia 22101

Dear Mr. Weiler:

This agency was forwarded a copy of a letter from the Department of the Air Force, Air National Guard Readiness Center to Mr. Robert Stuart, U.S. Department of the Interior, Denver Federal Center dated January 23, 1995 soliciting comments and information regarding the expansion of the Hardwood Range and related airspace actions in Wood County, Wisconsin. A review of the information provided with the scoping letter indicates that the proposed action should not have any impact on any of the lands managed by this agency. Presently, this agency has jurisdiction over certain unsurveyed islands located in the Wisconsin River in the vicinity of the proposed expansion. However, a review of the scoping document indicates that the new air-to-surface gunnery range boundaries should not affect these islands. Therefore, we see no further involvement in this action.

If your proposed action should change and the restricted area space boundaries are expanded or changed to include any portion of the Wisconsin River, please include this agency in your subsequent mailings. Thank you for the opportunity to comment on this action. If you have any questions, please feel free to contact Terry Saarela at (414) 297-4437.

Sincerely,

Jaime T. Provencio
Assistant District Manager
Lands and Renewable Resources

cc: ES (931)



WISCONSIN CONSERVATION CONGRESS

EXECUTIVE COMMITTEE

CHAIR
Francis W. Murphy
P.O. Box 92
Portage, WI 53901
(608) 742-3322

VICE-CHAIR
Robert O. Ellingson
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Madison, WI 53711
(608) 274-0279

SECRETARY-TREASURER
Donna Liljegren
239 S. Main
Fond du Lac, WI 54935
(414) 922-5329

March 21, 1995

Hardwood EIS
Environmental Division
ANRGC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20331

Attn: Major Kent Adams

Re: Air Corridors Over Wisconsin

Dear Major Adams:

District #9 of the Wisconsin Conservation Congress, a statutory body in the state of Wisconsin, reviewed the corridor program, as it affects Western Wisconsin. The proposal for the low level flying in those areas would be extremely distressful to the people living in the rural areas, and to the wildlife located therein.

To give you an example as to what I mean, there is 65,000 turkey permits out in the state of Wisconsin, with a season commencing in about three weeks. Low level flights over those areas would certainly be disruptive to the entire program in Western Wisconsin.

Those areas are densely inhabited in some areas, and in others there are occupied farms. I believe this is the reason why the delegates from the seven counties involved, at a meeting held on March 13, 1995, unanimously opposed the corridors over the inhabited areas, and in the rural areas of Western Wisconsin.

I would like to register the opinion of the Wisconsin Conservation Congress to you, and support the positions taken by Senator Feingold, and Senator Kohl, on this matter.

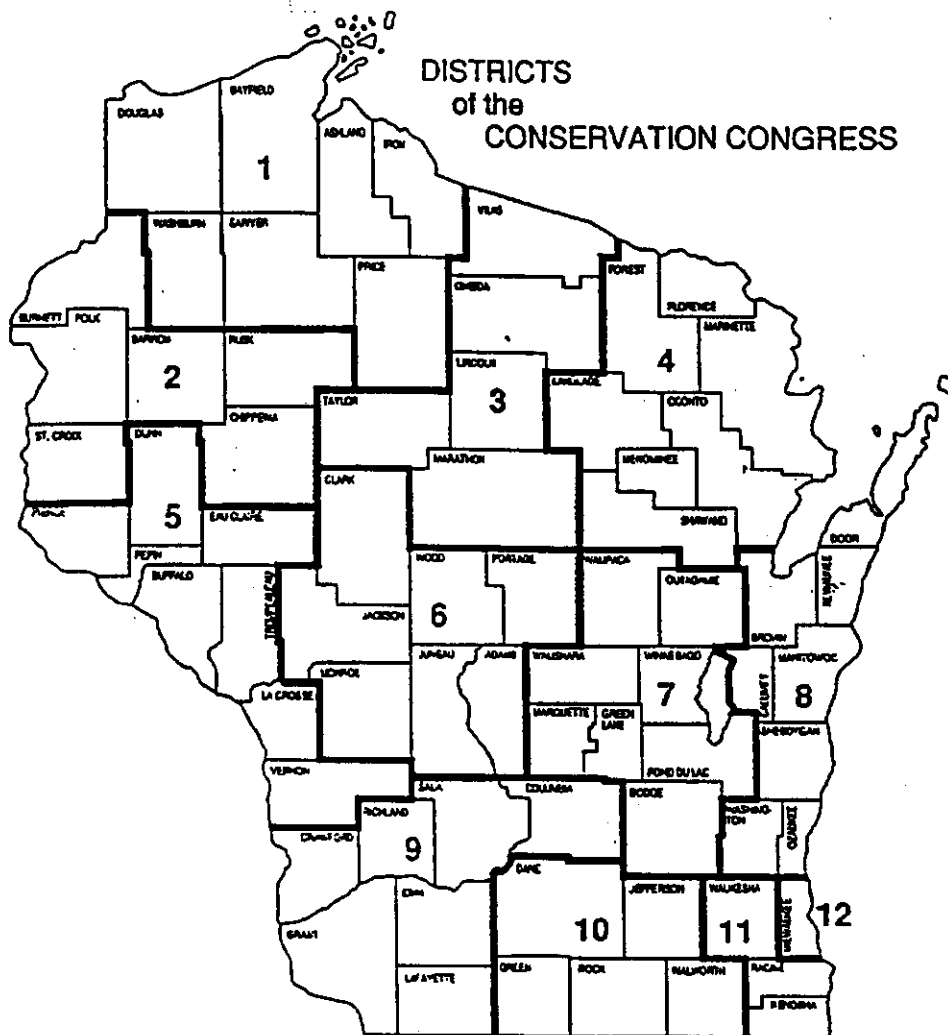
Thank you for taking the time to review my letter.

Yours for Conservation,

Francis W. Murphy
Francis W. Murphy

FWM:hs

cc: Senator Russ Feingold
Senator Herbert Kohl
Kurt Welke



1994-1995

District 1
Ruel Fleming
 HC 62 Box 105
 Herbster, 54844 (Bayfield)
 (715) 774-3863
Paul Gulen
 806 4th Ave. W.
 Ashland, 54806 (Ashland)
 (715) 682-5971

District 2
Michael Reiter
 461 Parkview Dr.
 New Richmond, 54017 (St. Croix)
 (715) 246-6643
Gary Gaier
 Rt. 5, Box 16
 Chippewa Falls, 54729 (Chippewa)
 (715) 723-7449

District 3
Jim Bray
 2041 Hickory Rd.
 Mosinee, 54455 (Marathon)
 (715) 693-6446
Steven Oestreicher
 8475 Oneida Lake Dr.
 Harshaw, 54529 (Oneida)
 (715) 282-5956

District 4
John Kriha
 W10085 Cty. Hwy. X
 Antigo, 54409 (Langlade)
 (715) 623-3660
Russell Mellow
 P.O. Box 315
 Wabeno, 54566 (Forest)
 (715) 473-2738

District 5
Mark Noll
 S1917 Buena Vista Rd.
 Alma, 54610 (Buffalo)
 (608) 685-4580
Russell Hitz
 Rt. 1, Box 4
 Wheeler, 54772 (Dunn)
 (715) 632-2143

District 6
Merlin Lindow
 W8270 US Hwy. 10
 Neillsville, 54456 (Clark)
 (715) 743-2762
William Buckley
 1004 S. Cherry Ave.
 Marshfield, 54449 (Wood)
 (715) 384-2214

District 7
Richard Chier
 W2005 Irving Park Rd.
 Green Lake, 54941 (Green Lake)
 (414) 294-3273
Donna Liljegren
 239 S. Main
 Fond du Lac, 54935 (Fond du Lac)
 (414) 922-5329

District 8
Michael Brust
 235 S. Rural St.
 Hartford, 53027 (Washington)
 (414) 673-6072
Edgar Harvey Jr.
 N3635 Timberview Rd.
 Waldo, 53093 (Sheboygan)
 (414) 528-7071

District 9
Francis Murphy
 Box 92
 Portage, 53901 (Columbia)
 (608) 742-3322
David Ladd
 130 Madison St.
 Dodgeville, 53533 (Iowa)
 (608) 935-5941

District 10
Kenneth Risley
 W3874 Krueger
 Monticello, 53570 (Green)
 (608) 938-4743
Robert Ellingson
 5001 Woodburn Dr.
 Madison, 53711 (Dane)
 (608) 274-0279

District 11
Arthur Predney
 17705 Old Yorkville Rd.
 Union Grove, 53182 (Racine)
 (414) 878-3928
James Butterbrodt
 4824-22nd. Ave.
 Kenosha, 53140 (Kenosha)
 (414) 657-7877

District 12
Louis Kowieski
 719 South 97th St.
 West Allis, 53214 (Milwaukee)
 (414) 475-0219
Theodore Lind
 4434 North 52nd St.
 Milwaukee, 53218 (Milwaukee)
 (414) 466-4898

Congress Liaison
Al Phelan
 Dept of Natural Resources
 Box H-17
 Madison, WI 53707
 (608) 266-0580



Wisconsin Department of Transportation

Division of Transportation Assistance
DT73

BUREAU OF AERONAUTICS
4802 Sheboygan Avenue
P.O. Box 7914
Madison, WI 53707-7914

March 23, 1995

Telephone: (608) 266-3351
FAX: (608) 267-6748
TTY: (608) 266-3351

Hardwood EIS
c/o Mr. Jeffrey Weiler
Science and Engineering Assoc., Inc.
7918 Jones Branch Dr., Suite 500
McLean, VA 22101

Dear Mr. Weiler

Hardwood Range Expansion and Related Airspace Action

The following is a recapping of our initial comments given in the form of oral testimony at the scoping meeting held at the Mauston Expo Center on February 14th. Basically our comments remain unchanged with the exception of emphasising our concern with the proposed military routes coming up through southern and southwestern Wisconsin. We will discuss all the points again for the record and should you need any further information, please contact us directly.

Hardwood Range Expansion - From what was presented, we understand that the lateral confines of the Range (R6904) will not change. As such, it is our understanding that the use of the new impact area will not adversely impact access to Marshfield or Wisconsin Rapids. If the instrument approaches to these two airports would be degraded/restricted by this Expansion, we would strongly object. The area under R6904A that will now extend to the ground has the potential of affecting crop dusters operating in the area. We understand that Volk Field has a working relationship with the affected crop dusters whereby they can fly in the restricted/MOA complex with prior coordination. This arrangement should continue.

The radar coverage in the Volk area is essential to both military and general/civil aviation safety. Unfortunately, the current radar coverage is limited because of the primary antenna being located on low terrain next to the runway. With the proposed increase of military flights in this initiative, we feel it is paramount that radar coverage be improved. Placing the primary antenna on top of the bluff next to the Volk runway, will provide for significantly enhance radar coverage.

Related Airspace Actions - There are three airspace actions we'd like to specifically address; expanded use of Volk South MOA, expanded use of VR1616 and the establishment military training routes in southwestern Wisconsin. We'll cover these individually as they are all somewhat different. The first area regarding the increased use of Volk South MOA may cause potential increased risks to general/civil aviation flying through the area, especially in and out of Necedah. By providing better radar coverage of the entire South MOA, interaction between aircraft can be significantly reduced. Placing the radar antenna on the bluff will improve coverage in the South MOA.

The second area we'll cover is the increased use of VR1616. Overall, the 11% increase comes to an additional flight/formation every 3-4 days. Since that route doesn't pass over any public use airports, or adversely affect instrument approaches in the state, we do not see the increase as raising any significant adverse aeronautical impacts.

The last area we'll address is the proposed establishment of the new military training routes. One of these routes would originate near Mineral Point(Iowa County Airport) and proceed to the northwest where it would join, and overlay a second corridor originating in Iowa and proceeding northeast toward the Adams/Friendship area, then back to the northwest to Hardwood Range(R6903). While looking over these routes we noted that they pass directly over 3 public airports and one private airport that's open to the public. These airports will have to be avoided by 3 miles or overflown above 1,500'. The airports owned by municipalities are located at Hillsboro, Adams/Friendship and Necedah. The privately owned, public use airport is located near Wonewoc.

The Joshua Sanford Airport is located at Hillsboro. It is owned, maintained and operated as a public airport by the City of Hillsboro. It has a 3,500x50' paved, lighted runway(5/23) with standard airport markings. There is also an NDB next to the airport(Kickapoo, 251 HBW). The FAA has decided not to chart the airport because they feel it does not meet their technical standards. The FAA has never invested funds in the airport and are being steadfast in their resolve to not chart it. The airport is safe, has 2 hangars and an active flight instructor. At a dedication ceremony 2 years ago, the airport was named after a Native American who flew with the Flying Tigers in WWII. The community are very proud of their municipally owned and operated airport and take good care of it. We have attached a photograph of the facility for your reference. Its airport reference point is 43-39.4N, 90-19.7W and its elevation is 941'MSL.


Of additional concern, there are also active public airports located in close proximity to the MTRs which will also need to be avoided by 3 miles and 1,500'. The publically owned airports are located at Mineral Point, Boscobel, Prairie du Chien, Richland Center(A new paved runway being built this summer), Viroqua and Mauston/New Lisbon. There are currently instrument approach procedures at Prairie du Chien, Richland Center, Mineral Point and Necedah. Mauston/New Lisbon and Viroqua have LORAN C instrument approaches drawn up for them which will also eventually become GPS approaches. We would object if the use of the IR route would adversely affect or limit the use of these public airports during instrument conditions.

There are numerous private-restricted use airports located under the two proposed corridors. One of those is located in Crawford County and regularly has business jet traffic. It presently has a 3,800x72' asphalt runway(11/29), an airport elevation of 1,055'MSL and is located at 43-21.2N, 90-40.8W. This is an active privately owned airport which also is not currently charted on the Chicago Sectional.

Summary - The low altitude routes coming up through southwestern Wisconsin pose a serious flight safety hazard to pilots operating from at least four public use airports. The potential also exists for adversely affecting the use of a number of additional public airports during instrument conditions. Both these issues are of a serious nature and need to be resolved. The addition of the MOA/Military airspace advisory frequency(120.45) along with moving the radar search antenna to the top of the bluff next to Volk's runway will greatly enhance the overall safety to both military and general/civil aviation pilots in the central Wisconsin area.

If you have any questions regarding any of our comments, please contact us accordingly.

Sincerely,

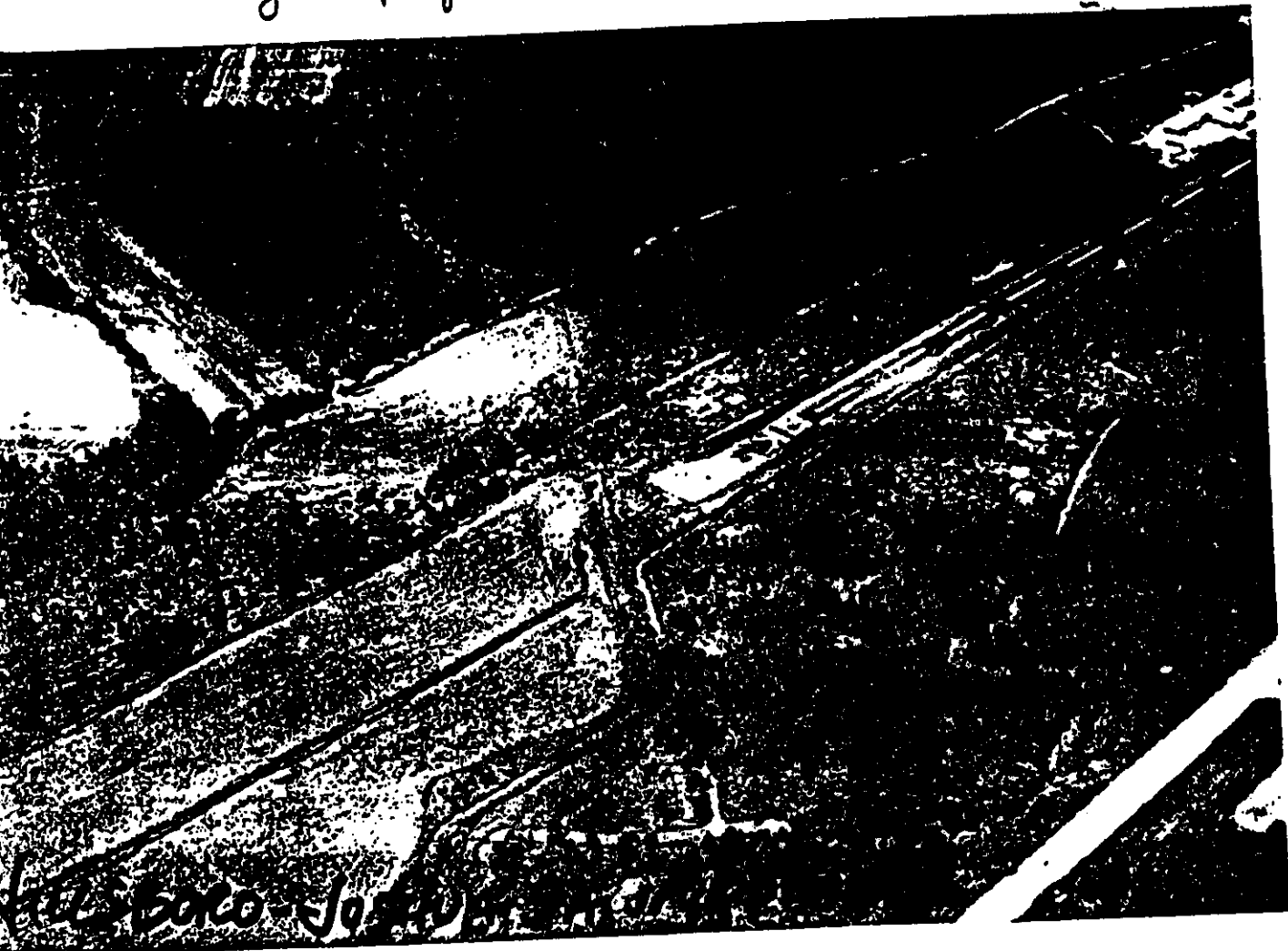

R. W. Kunkel, P.E.
Director

cc: B/G Albert H. Wilkening, Cmdr
WI Air National Guard

A map titled "AIRPORT LOCATION" showing the area around Hillabore. The map includes a north arrow pointing upwards. A shaded rectangular area is labeled "AIRPORT" and "Hillabore". Several roads are shown, including a main road running horizontally across the top and another running vertically on the right. Road markers include "F", "W", "FF", "Y", "Q", "80", "33", and "82". A scale bar at the bottom right indicates distances in miles, with markings for 0, 1, and 2 miles. The text "SCALE IN MILES" and "WI." are also present.

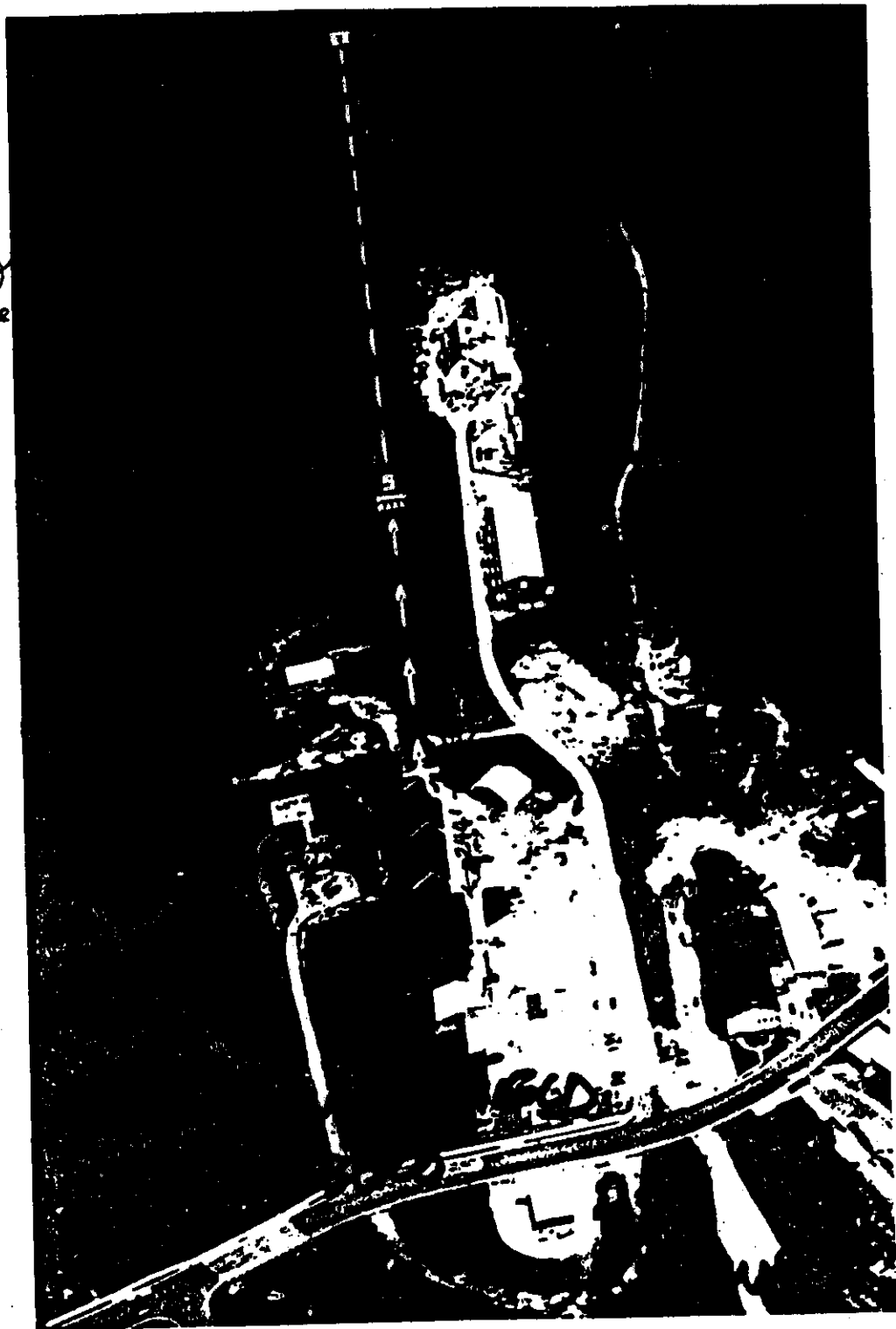


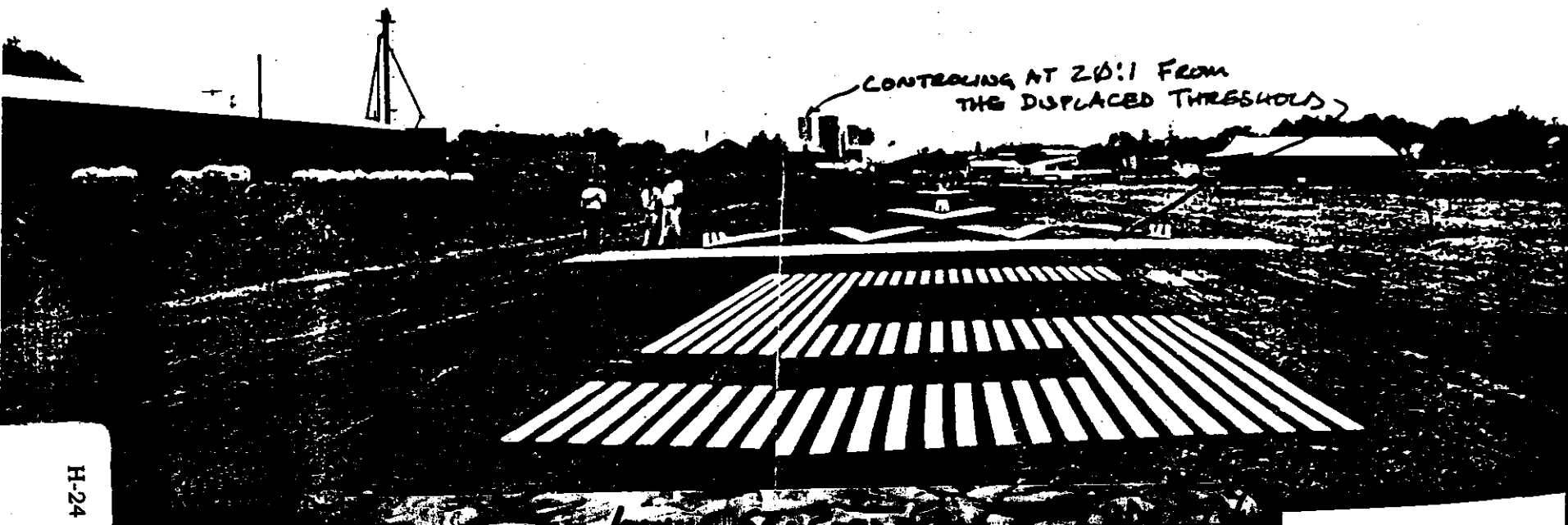
Mike - This runway end has a 243' paved and marked runway safety area, plus an additional 150' graded level area of the physical end of the pavement. T.J. Thomas/30 Jun 93



ke - the Rwy 5 end
as 244' of paved safety
area and a 740' displaced
threshold. The total
runway length is then
 $740' + 2343' = \underline{3083'}$

R.V. Thomas
30 June 93





H-24





U.S. Department
of Transportation
**Federal Aviation
Administration**

Great Lakes Region
Illinois, Indiana, Michigan,
Minnesota, North Dakota,
Ohio, South Dakota,
Wisconsin

2300 East Devon Avenue
Des Plaines, Illinois 60018

MAR 27 1995

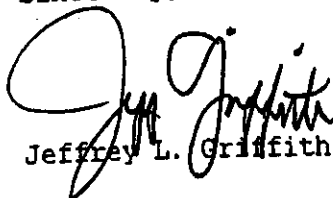
Major Kent Adams
Program Manager, Hardwood EIS
Air National Guard Readiness Center
ANGRC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20331-5157

Dear Major Adams:

Thank you for the opportunity to review the Notice of Intent and Description of Proposed Action and Alternatives for the proposed Hardwood Range Expansion and Related Airspace Actions project. We have no comments to submit at this time. Because the Hardwood Range lies within Minneapolis Air Route Traffic Control airspace, we request that the System Management Branch be afforded the opportunity to review all preliminary, draft, and final environmental documents.

Please direct any questions you may have to Ms. Annette Davis, AGL-530E, at (708) 294-7832.

Sincerely,



Jeffrey L. Griffith

cc:

Mr. Jeffrey Weiler



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

MAR 30 1995

ME-19J

Marion McCullick
Box 74
Sterling, WI 54645

Dear Mr. McCullick:

Thank you for your letter regarding the Air National Guard's proposed expansion of the Hardwood Range military operations in southwestern Wisconsin and northeastern Iowa. We have received correspondence such as yours from numerous people affected by the proposed expansion, and I trust this response will be of assistance to you.

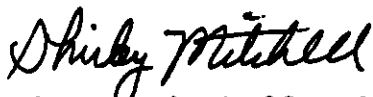
The National Environmental Policy Act (NEPA) requires the lead agency (the decision making agency) for a project to conduct the environmental analysis for that project. In this case, the agency is the U.S. Air Force. The responsibility for scoping and preparing the Draft Environmental Impact Statement (EIS) for the proposed expansion lies with the Air Force. The Air Force is the decision maker and has the responsibility to decide to move ahead with the proposal, revoke it, extend comment periods on the scoping process or other public review process, establish public hearings, etc. The Council of Environmental Quality's implementing regulations of NEPA includes some requirements that the Air Force must follow in preparing the EIS. However, the Department of Defense also has its own implementing regulations of NEPA that further defines its public involvement process. For more information, the contact at the Air Force for this project is Lieutenant Colonel Kent Adams. Lieutenant Colonel Adams can be reached at (301) 981-8270, or at the following address:

Hardwood EIS, Environmental Division
ANRGC/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20331-5157

Our Agency's role in the proposed action is that of a reviewing agency. We will be submitting comments on this project throughout the NEPA review process. We have contacted the Air Force to let them know that we will be reviewing this project and submitting comments.

Thank you for your inquiry. If you have any further questions, please feel free to contact us again.

Sincerely yours,

A handwritten signature in cursive script that reads "Shirley Mitchell".

Shirley Mitchell, Chief
Planning and Assessment Branch

cc: Lt. Col. Kent Adams, U.S. Air Force (w/Addressee List)
Gene Gunn, EPA, Region 7, Kansas City, KS (w/Addressee List)

Addressee List:

Kathy Alexander
138 S. 23rd Street
La Crosse, WI 54601

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P.O. Box 264
La Farge, WI 54639

Marian Firmani
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Gays Mills, WI 54631

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Wauzeka, WI 53826

Gregory R. Everitt
110 Spruce Street
Mineral Point, WI 53565-1029

Laurie Wohl
1030 E. 50th Street
Chicago, IL 60615



State Historical Society of Wisconsin

Division of Historic Preservation

816 State Street • Madison, Wisconsin 53706-1488

☎ (608) 264-6500 • FAX (608) 264-6404

February 10, 1995

Mr. David C. Van Gasbeck
Department of the Air Force
Air National Guard Readiness Center
3500 Fetchet Avenue
Andrews Air Force Base, Maryland 20331-5157

IN REPLY PLEASE REFER TO SHSW: #95-0152/JU/WO
RE: Hardwood Range Expansion and Related Airspace Actions

Dear Mr. Van Gasbeck:

The Division is currently reviewing the above-referenced project as required for compliance with Section 106 of the National Historic Preservation Act and 36 CFR Part 800: Protection of Historic Properties, the regulations of the Advisory Council on Historic Preservation governing the section 106 review process and have the following comments to make:

Please have prepared a survey to identify and evaluate properties which may be eligible for listing on the National Register of Historic Places. This report should be prepared in accordance with the enclosed "Architecture/Historic Survey Report Specifications for Compliance-Driven Survey."

We recommend that this site be surveyed by a qualified archeologist to locate and evaluate the significance of any archeological sites that may be present. When the survey has been completed, please provide two copies of the archeologist's report for our review and comment. Please ensure that the archeologist's report is accompanied by our project identification number (SHSW: #95-0152).

If there are any questions concerning this matter, please contact me at (608) 264-6507.

Sincerely,

Sherman J. Banker
Compliance Archeologist

SJB:lks



State Historical Society of Wisconsin

Division of Historic Preservation

816 State Street • Madison, Wisconsin 53706-1488

■ (608) 264-6500 • FAX (608) 264-6404

August, 1994

ARCHITECTURE/HISTORY SURVEY REPORT SPECIFICATIONS FOR COMPLIANCE-DRIVEN SURVEYS

Section 106 of the National Historic Preservation Act specifies that prior to the approval of the expenditure of any Federal funds or assistance or prior to the issuance of any license or permit, Federal agencies in consultation with the State Historic Preservation Office "shall take into account the effect of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register."

When appropriate, the State Historic Preservation Officer will recommend that the responsible Federal Agency Official or authorized designee undertake a survey to identify and evaluate what National Register listed or eligible properties exist within the determined boundaries of the project/survey area. Once the potentially affected properties have been identified, they must be evaluated according to National Register criteria. Only then can the potential impacts of a federally funded, permitted or licensed action be appropriately assessed.

The Compliance Section of the Wisconsin State Historic Preservation Office has developed these survey specifications for two primary reasons:

1) Section 106 compliance-driven surveys are an increasingly important source of inventory data. They should be conducted in a manner that complements and contributes to the Wisconsin State Historic Preservation Office's effort to fulfill its public mandate and responsibility under Section 101(b)(3)(A) of the National Historic Preservation Act to "direct and conduct a comprehensive statewide survey of historic properties."

The results of the identification process should be in a form appropriate for incorporation into the Wisconsin Inventory of Historic Places. These guidelines should facilitate the integration of compliance surveys and their final products into the existing Statewide Inventory.

2) To ensure that compliance-driven surveys are consistent with the "Secretary of Interior's Standards and Guidelines for Identification and Evaluation" and with the Wisconsin Cultural Resource Management Plan.

Format for Compliance-Driven Surveys Annotated

- I. **Abstract:** A brief summary, typically a page or less, describing the following:
- a). the undertaking motivating the survey. Describe the DOT project: ID, highway, termini, extent of changes to roadway.
 - b). the specific federal involvement with the undertaking. Along with the information above you can simply add that federal funding may be used on the road project.
 - c). a brief synopsis of survey objectives. This should be some thing along the lines of "to identify any potentially historic/eligible properties within the area of potential effect (APE) for this highway project".
 - d). general findings. Simply give the number of potentially NREHP eligible properties identified within the APE. Give the name of the properties and code number, and the page number in this report where a description and evaluation of the properties can be found (this should correspond directly to IV-D: Survey Results).
 - e). an evaluation of how well the survey met the stated objectives. We anticipate that these surveys would always meet those stated objectives, except perhaps in those extreme cases where (for instance) access to a property was limited and therefore it's evaluation was not possible.

Example abstract:

The Wisconsin Department of Transportation proposes to reconstruct 8 miles of STH 00, from Smith Road to Jones Road in Dane County. Because federal funding will be used for this project, this survey and report were completed in partial compliance with Section 106 of the Historic Preservation Act of 1966.

The proposed project (ID 0000-00-00) is to widen STH 00 from the existing two 10 foot lanes with 3 foot gravel shoulders (26 feet total), to two 12 foot lanes with 6 foot shoulders - 3 paved (36 feet total). In consultation with the design engineer, the APE for this project was determined to be "N" feet on either side of the centerline (see exhibit "a"). Structures within this 2N foot corridor that were determined to be greater than 50 years old and maintained a level of integrity were inventoried - this consisted of photographing the property and producing an inventory card. Brief research was conducted to determine if any of these were potentially eligible for or already listed on the National Register of Historic Places.

Thirty-six properties within the APE were inventoried. Of these, four were determined to be potentially eligible for the NREHP, and one was found to already be listed. These are:

1. The Newbery Property (DA-100/01), a c.1860 greek revival house. Potentially eligible - see "survey results", page 8.
 2. The Bernstein Farmstead (DA-100/08), a c.1890 farmstead with a Queen Anne house and several contributing out buildings. Potentially eligible - see "survey results", page 8.
 3. The Dexter Store (DA-100/11), an 1865 boomtown building. Potentially eligible - see "survey results", page 9.
 4. The Banker Mill (DA-100/24), an 1850s saw mill. Potentially eligible - see "survey results", page 9.
-
5. The Little Town Opera House (DA-88/4), 1861 boomtown building. Listed on the NREHP 6-22-88. See "survey results", page 10.

This survey was successful in meeting the stated objectives in that the potentially eligible properties within the APE for this highway project were identified.

III. Introductory Page

In the SEFO format/specs. the information desired is very clear. Any other extraneous information is unnecessary. The information is most readable and more readily accessed when formatted in a list rather than in text.

Example Introductory Page:

- A. **Name of Project:** Reconstruct STH 00, Smith Road to Jones Road
- B. **SESW Project ID#:** 94-0000/DA
- C. **Agency ID#:** WisDOT 0000-00-00
- D. **Project Description:** The proposed project is to widen STH 00 from the existing two 10 foot lanes with 3 foot gravel shoulders (26 feet total), to two 12 foot lanes with 6 foot shoulders - 3 paved (36 feet total).
- E. **Brief Description of
 the Area Surveyed:** In consultation with the design engineer, an Area of Potential Effect (APE) for this project was determined to be "N" feet on either side of the centerline (see exhibit "a") - this is the area that was surveyed. (NOTE: use the "APE Checklist" to help determine the APE).
- F. **Project Location:** County: Dane
- Communities: Village of Little Town
 Village of Dexterville
- USGS Quads (7.5 min.): Little Town
 Dexter Lake
 Hilltop

IV. Survey Report Text: This should be as succinct as possible. You should provide only information that is directly relevant to the project/issue. Again, please avoid extraneous information.

A: Physical Setting - Describe in brief the physical setting and historic context of the project/survey area. Be brief. Reiteration of the project location information above is not necessary. Lengthy descriptions of the terrain, vegetation, and/or physiography is not necessary when describing the land use. As you can see if you read the SHPO specifications carefully, they want information on land use not terrain.

1. Existing and historical land use (e.g. agricultural, residential, commercial, etc.) Example: "Historically, the land use in the project area has been rural/agricultural, however, in recent years, new subdivisions have been developed and increasing numbers of residential and commercial structures have been built". OR "Historically, the project area was primarily residential, with a few commercial structures. In the last few decades, however, commercial properties have become more predominant in the area". OR "Historically the area was predominantly agricultural, and it remains largely the same today".
2. Density of Development. Example: "Development in this largely agricultural area is very sparse, except within the boundaries of the Village of Little Town, where development is more dense". OR "Development is very dense in this largely residential area where virtually every lot has a structure on it".
3. General Types of Properties Identified: Example: "For the most part, the potentially historic properties identified were rural farmsteads, although a few commercial buildings were also inventoried". OR "Generally, the properties along the project corridor were residential in nature".

B. Survey Methodology - Discuss the specific methodology used to conduct the survey. This should, at a minimum, include the following:

1. Survey Personnel Qualifications per 36 CFR 61. A brief statement that you meet the qualifications and to see attached resume/vitae is all that is necessary.
2. Survey Dates.
3. Survey Objectives. This should just be a reiteration of the objectives as written in the abstract.
4. Area Researched and Surveyed. The area surveyed should be the APE and no more. The area researched can be a larger area, however, make the differentiation between the two very clear in the document. Research area can include a regional approach in order to put the surveyed properties into context.
5. Research Design. This should encompass both the literature/archival investigation and the field investigation that was conducted. What was done? How and why was it done?
6. Intensity of Coverage. We anticipate that surveys conducted for DOT projects would almost always be reconnaissance level surveys. If your survey is NOT, please explain.
7. Evaluation of Survey Results. Again, simply reiterate what was mentioned in the abstract about this point.

- C. Relevant Background Information: The key word here is RELEVANT. This does not necessarily need to be an exhaustive history of the county or community where the project is located. If the survey area is essentially agricultural, extensive information about the history of communities in the county are probably not very relevant; what we would like to see is a succinct history of farming in that area (and/or a broader area if needed for context). Likewise, if the project is located in a urban-residential area, we do not need information about the history of farming. Review the relevant chapters from Cultural Resource Management Plan and summarize these contexts as they fit the properties you encounter in your survey.

Include the scope of any previous survey/evaluation work done for the area. Has a survey of any kind been done in the area before? Are there properties within the APE that are found to already be listed on or determined eligible for the National Register? Are any properties within the APE already identified in the Wisconsin Inventory of Historic Places? Are any properties within the APE designated as local landmarks? As mentioned in the specs., be sure to evaluate any previous work done in relation to current standards.

- D. Survey Results - Determine if any of the identified properties present in the survey area are noteworthy; clearly note if there is a need for further evaluation to determine their eligibility for the NRHP. State the rationale for these field/preliminary conclusions for each eligible property by specific references to applicable NRHP criteria and areas of significance as defined in the Cultural Resource Management Plan. This section should directly correspond to the properties referenced in the abstract. It should discuss only, and all, potentially eligible properties identified through field and archival searching. Be sure to include discussion as directed by SHPO above.

Example Survey Results:

As a result of field investigation and archival/literature searches, survey cards were prepared for 36 properties and these properties were then evaluated. Of these, 4 were determined to be potentially eligible for the National Register of Historic Places. These properties are:

1. The Newbery Property (DA-100/01) This building is a c.1860 greek revival house.....(briefly describe)....It is an excellent representation of the greek revival style as described in RP3 and is believed to be eligible for the NRHP under criterion C at a local level as an excellent example of greek revival architecture. A Determination of Eligibility is recommended for this property.

2.

3.

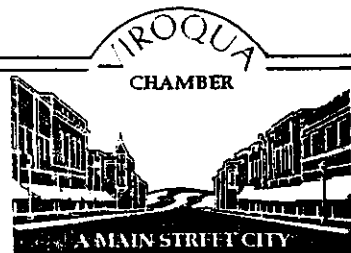
4.

- E. Establish Further Survey Needs: We anticipate that generally there should be no further survey needs, since you are hired to fulfill any such needs we have. If you do recognize further needs, please explain.

Map: It is very important for the SHPO to have an accurate map of the project area in order to evaluate DOT impacts to potentially significant historic properties. All maps should include the following:

Maps should be to scale if possible and a scale bar should be included - The prime consultant or WisDOT should be able to provide you with one.

Lines on the map should clearly show: current and proposed alignment and current and proposed right-of-way. If possible, the current and proposed slope intercept can also be helpful.



Where Quality Comes To Life!

April 17, 1995

Dear Major Kent Adams:

Viroqua, Wisconsin was proudly designated a Main Street City by Governor Tommy Thompson in June of 1989. Since then our small city has worked very hard to maintain the highest quality of life for our citizens and visitors. Viroqua has gained national recognition in the Smithsonian, the Wall Street Journal, the Readers Digest and on the CBS Evening News telling people about our tranquil and pristine "way of life". We are concerned that the existence and expansion of the Wisconsin Air National Guard low-level, high speed flights along the two intersecting corridors over Vernon County (the Hardwood Range) would be disastrous to this area - both environmentally and economically.

We are very concerned in keeping facilities like Fort McCoy and Volk Field viable operations but have a difficult time balancing these two issues. We, therefore, as the Board of Directors of The Viroqua Chamber - A Main Street City have the following questions:

Why doesn't the Air Force use the flight corridors they already have?

Why have a low-level flight corridor over an area that has a high population of wildlife, livestock and people?

Is the Air Force aware of the dense bird and wild turkey populations in this area and the high risk that each pilot will take during the low-level flights?

How safe will the residents be from crashing aircraft?

How will the low-level flights replace the income lost by retail businesses, tourism and industry?

We are establishing a new economic base in this area built around retirees and tourism. How can we continue to attract these people with the threat and possibility of fly-overs? How can we put aside the fears of our citizens?

Please carefully review these questions and concerns.

Respectfully,

Fred Nelson, Pres.

Dave Robinson, Vice-Pres.

Cheryl Sime, Sec.

Trudy Wallin, Treas.

Rev. Steve Fossum, Fund-Raising Chair

Sharon Cahoon

Steve Felix

Bonnie Fortney

Wayne Gates

Trygve Overbo

Bob Runyan

Lavonne Swiggum

Ingrid Mahan, Program Manager

The Viroqua Chamber - A Main Street City

Board of Directors and Program Manager



State Historical Society of Wisconsin

Division of Historic Preservation

816 State Street • Madison, Wisconsin 53706-1488

☎ (608) 264-6500 • FAX (608) 264-6404

RECEIVED JUL 10 1995

July 6, 1995

Ms. Lorraine S. Gross
SAIC
405 South 8th St., Suite 201
Boise, Idaho 83702

SHSW 95-0152

RE: Hardwood Range expansion air space changes

Dear Ms. Gross,

Please excuse the delay in this response to your request for information on historical and archeological sites that might be affected by the proposed air space expansion for the Hardwoods Bombing Range.

As I explained to you in our telephone conversation several weeks ago, our files contain data on hundreds if not thousands of historical and archeological sites located in the areas of concern depicted on your maps. Because of the large areas and numbers of properties involved, I cannot provide you with a listing of all of these properties as you requested. I have enclosed a copy of the most recent compilation of National Register of Historic Places listings for Wisconsin as well as a copy of the National Register of Historic Places Nomination form for the Cranberry Creek Archeological District that you specifically requested.

I would recommend that you have someone from your staff come to our offices to get the data on previously identified historical and archeological sites from our files. Archeological sites, burial sites and historic buildings are each mapped on sets of USGS topographic quadrangles; and, site data as well as locations of previous archeological surveys are also readily available.

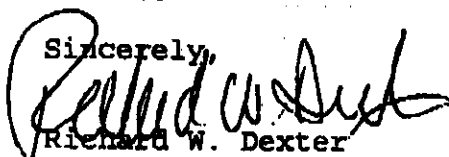
Because of the nature of this undertaking and the extensive areas to be affected, I think that we need to work with you, the Minnesota and Iowa SHPO's, and the Advisory Council on Historic Preservation to determine the exact nature and appropriateness of additional studies that may need to be completed to identify affected resources, and to define exactly what effects might be anticipated. For example, what physical effects to historic buildings, if any, might reasonably be expected to occur as a result of this undertaking? You will also need to deal with the effects of these flights on traditional cultural properties

especially those related to the Old Order Amish and Native Americans. We will need to determine what studies will be necessary to identify these types of resources and to define what these effects might be.

It was not clear from your letter if your company was also going to be responsible for completing the archeological and historical surveys for the 7000 acre bombing range expansion component of this project. We had previously recommended these studies directly to the Air Force, but have had no response from them on this aspect of the project.

I look forward to hearing from you on this undertaking. Please contact me at (608) 264-6509, if there are any questions of if I can be of any further assistance.

Sincerely,



Richard W. Dexter
Chief, Compliance Section

enclosures

CC: Druscilla Null, ACHP
Dennis Gimmestad, Minn SHPO
Beth Foster, Iowa SHPO

SOUTHWESTERN WISCONSIN:

Bombing Runs Trigger Citizen Protests

BY WILL FANTLE

The Air National Guard's plan to expand both its bombing range at Volk Field in Juneau County and the military flight corridors leading into it has stirred up a hornet's nest of opposition in southwestern Wisconsin. Citizens United, a group opposing the expansion, argues that the region's environment and quality of life will be ruined by the more than 2,000 annual "bombs" thundering perhaps as low as 300 feet above their wooded hills and tranquil valleys.

Their cause has been joined by a community of Old Order Amish, the Ho Chunk Indian tribe (formerly known as the Winnebago), and landowners hoping to hang on to their property—the Air National Guard (ANG) is also talking about acquiring 7,137 acres of public and private lands for Volk Field's broadened activities.

"The crux of the issue is what they want to do over our heads," says Steve O'Donnell, of rural Viola. "We don't gain a thing but danger," echoes Edie Ehler, who lives near Ferryville.

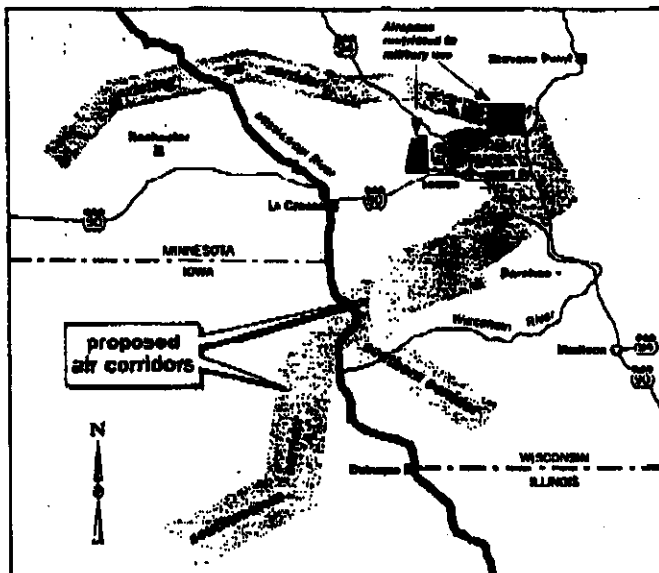
While the Cold War may be over, shifting national military priorities are increasing the role of the Air National Guard. "We're trying to provide more realistic and efficient training," says Capt. Dave Olson of the Wisconsin ANG. Volk Field, located about 60 miles north of Madison, already serves military units from Iowa, Illinois, Wisconsin and South Dakota.

The bombing-range expansion and the addition of two new major flight corridors would permit greater use of the base, Olson says the ANG won't put a price tag on the expansion until its environmental review of the plan is completed, a process expected to last from 18 to 24 months.

The expansion is not an isolated case. Oale Ahlquist, of the Minnesota-based National Aerospace Coalition, has identified more than 60 military proposals for new air corridors. He claims as much as 40% of American airspace is in the hands of the military—much more than is truly needed.

He notes that civilian aircraft can still fly through much of the military's airspace, but they're "just not advised to."

The two new flight corridors proposed for Volk Field would cut a 15- to 20-mile-wide path across southwestern Wisconsin. One corridor zigzags from the Wisconsin Dells area past Watertown, Iowa. The second begins near Mineral Point and cuts west and north before joining the first corridor above the Wisconsin River and near Clay's Mills. A third, existing corridor (for which a smaller expansion is proposed) runs west from Volk Field



The proposed air corridors cover 182 cities and towns and 39 wildlife areas.

into southern Minnesota, near Owatonna.

The maps provided in the ANG's proposed expansion plan are vague and lacking in detail. "They don't show communities, rivers, and wildlife centers under the flyways," notes Ehler.

As a result, Citizens United has compiled its own detailed inventory. Its maps pinpoint 182 cities and towns under the corridors. They also list 39 national, state and local wildlife areas and over 150 miles of affected river waters.

Olson says that the military will rely upon more detailed information in gauging the corridor impacts. The route maps contained in the proposal provide only what he calls "reference points," and any omissions pointed out by citizen reviewers contribute to the "success of the [review] process."

The region's Amish feel they've been left out, too. Numbering about 5,000, the Old Order Amish live a deeply religious, pacifist life. Usually, the Amish choose not to involve themselves with the affairs of the larger world. But after considerable internal debate, Amish elders elected to contact military officials with formal notice of their opposition to the Volk Field expansion.

In their 15-page handwritten letter addressed to the military, they describe their beliefs, lifestyle and reliance upon horses and dairy cattle for their livelihood.

"The Air National Guard's low-flying jets," the Amish wrote, "would not only disrupt our peaceful worship with high-decibel noise, but also infringe our Christian religious pacifist beliefs as visual symbols of war rending the heavens overhead us."

The bulk of the sorties will be flown by F-16s. The \$15 million single-engine warbirds, like those flying daily training missions out of Warren's Travis Field, can soar as low as 100 feet off the ground. Fighter maneuvers, according to Air Force policy, be suited at low-altitude flying.

It's the issue of these ground-skimming flights and the noise generated by the planes that riles opponents of the expansion. At 616 miles per hour and 300 feet off the ground, an F-16 sounds about twice as loud as a rock band, according to Air Force noise charts.

"People come up here for the peace and quiet," says O'Donnell. "Would you want to have as many as 72 flyovers in the same Sanctuary?" he asks.

While the ANG's proposed lacks information on noise levels, Olson is quick to point

out that National Guard policy prohibits flying below 600 feet. And even higher altitudes must be maintained over environmentally sensitive and populated areas, he points out.

Olson does add that training missions properly announced in advance, or national emergencies, would allow for flights at 300 feet above ground. Most of the flyovers will take place during the day, but a small number will occur at night, he says.

The Air National Guard's plan also mentions the need for pilots to practice "step-down" training. Fighter crews must, according to the document, "develop proficiency skills at altitudes as low as 100 feet" and "hard turns, along with climbs and dives, need to be practiced frequently." It's not clear where this frequent training will take place.

Retired Rear Adm. Eugene Carroll, director of the Center for Defense Information, disputes the continued need for low-altitude training. "I have flown hundreds of hours at low level when it was justified as necessary to penetrate heavily defended Soviet airspace with single aircraft on nuclear delivery missions," Carroll stated as a similar airspace expansion proceeding. "That justification no longer exists."

Although the outcry against the new air corridors has rung the loudest, landowners living near the bombing range expansion are also upset. The proposed 7,137-acre addition is near Babcock in southern Wood County. The ANG wants the land for new target locations, a cargo training drop zone and an assault landing strip.

Dale Gray is one landowner who says he'd lose his 160-acre farm to the expansion. Twice before Volk Field has been located at increasing the bombing range but have dropped the idea. He recalls talk of using the land to take land from those who didn't want to sell. "We don't mean nothing to them," Gray says.

Much of the acreage sought by the military is owned by Wood County. Their county board has passed a resolution opposing the land loss. And the Ho Chunk Indians, who own housing and gaming facilities close to the site, have recently declared their opposition in the larger bombing range.

O'Donnell is confident that the citizens will prevail in their struggle. The public certainly seems fired up; on a recent Saturday morning at Citizens United's Viroqua office, the phone rang incessantly during the course of the interview.

"We're going to win, I have no doubts whatsoever," O'Donnell insists. "We have a vigorous form of demonstrable activity occurring here. We can't let them win."



4469 48th Avenue Court
Rock Island, Illinois 61201
309/793-5800

July 10, 1995

OFFICIAL STATE CONSERVATION AGENCIES COOPERATING:
ILLINOIS ↔ IOWA ↔ MINNESOTA ↔ MISSOURI ↔ WISCONSIN

Program Manager, Hardwood EIS
Environmental Division
HNGRC/CEVP
3500 Fetchet Avenue
Andrews AFB, Maryland 20331-5156

Dear Sir:

This letter is in response to the Environmental Impact Statement and proposed modification and expansion of Air National Guard's Hardwood Range operations. Our organization did not receive notice of this proposal. Individual members, however, brought it to our group's attention. Unfortunately, the issue surfaced with insufficient time to respond within the February 1995 scoping meetings. We trust, however, that these comments will be considered and included in the Draft EIS now being prepared.

The Upper Mississippi River Conservation Committee (UMRCC) is a consortium of natural resource management agencies of Illinois, Minnesota, Missouri and Wisconsin sharing a common interest in the Mississippi River. Working together with citizens, private groups and other agencies, the UMRCC promotes coordinated preservation and wise utilization of the natural and recreational resources of the Upper Mississippi River.

The Air National Guard proposal includes approximately thirty miles of the Upper Mississippi River corridor from Lansing, Iowa, downstream to the McGregor area. Although UMRCC members have concerns applicable to the entire corridor and proposal, we will limit these comments to the Mississippi River corridor.

It is essential that environmental analysis of this project proposal include consideration of the significant resource characteristics of the Mississippi corridor.

- The Mississippi River is a most important migration corridor in the Midwest. The corridor is aligned north to south and links a great spectrum of North American breeding and wintering areas used by up to 40% of North America's migratory birds. Island, riparian and bluff woodland provide continuous woodland habitat from the Gulf Coast to the lake states. Aquatic and wetland areas along the

Mississippi River floodplain form a contiguous ribbon of migratory bird habitat from northern breeding grounds of water birds to delta wintering areas. The importance of this corridor is evidenced when considering that a majority of the continental population of some birds, such as the canvasback duck, may utilize the corridor at one time.

The reach of the Mississippi River impacted by this proposal is representative of corridor values to migratory birds. Lower Pool 9, above Harpers Ferry, attracts large concentrations of diving ducks. This reach is also a significant migratory corridor for raptors as evidenced by inventories maintained in the Prairie du Chien area.

- The Mississippi River in this reach represents the greatest scenic resource and the most significant natural resource-based recreation/tourism industry in the upper Midwest. A unique combination of grand scenery, pastoral landscapes, water-based recreation and historic and cultural interests make this reach of river a magnet for persons seeking a change from more typical Midwest rural/urban environments. For many, this reach of the Mississippi River is an irreplaceable resource. A recent Corps of Engineers study demonstrates that recreation on the UMR provides \$1 billion annually to the economy. Due to the magnitude and unique values of this river corridor, potential impacts of the proposal must be carefully considered.
- Low level flights over the river position aircraft and migrant or resident birds, large and small, for possible collision. Bird densities in the corridor may be the highest in the Midwest for comparably-sized units. Relatively small areas of concentration, as in lower Pool 9, may contain waterfowl numbering in the hundreds of thousands and ranging in size up to giant Canada geese, tundra or trumpeter swans up to 20+ pounds. Significant migrations or numbers of local residents of various raptor and wading bird species are also common and include bald eagles, various hawk and heron species. These factors substantiate the real and relative value of this Mississippi River corridor to bird species.
- Flights over corridor habitats may, or will, directly disturb birds using the river habitats for resting and feeding. Feeding efficiency is determined in part by the relative density of food and disturbance. Factors limiting up-take of food resources or requiring avoidance energy, as disturbance, can impact physical condition of individual birds or populations, and have seasonal impacts on reproductive efficiency. Empirical evidence relates both visual and audible factors as causing disturbance to bird concentrations. In fact, insulation from disturbance is the major reason large areas of the Upper Mississippi have been designated Refuge Closed Areas. The proposed flight

corridor includes one such area (Harper Slough Closed Area) which is a critical link-habitat for migrating diving ducks in the 180 river miles between Clinton, Iowa, and LaCrosse, Wisconsin.

- Flights over the Mississippi River corridor will be observed by river users and perceived impacts will vary with recreational activity, location, time of day, frequency of flights, season of year, and altitude. One attraction of the Mississippi River corridor is relative solitude valued by users of river backwaters and islands, campers, trail users at places like Effigy Mounds and Yellow River State Forest will certainly lose value with the physical intrusion of low level flights. These intrusions are especially unfortunate in a small region which currently offers the best in quiet, recreational experiences within a large area. In Iowa, for example, no other area offers this combination of landscape and opportunity for outdoor recreation so unique from the remainder of an agricultural state. The zone of this proposal, as it crosses the Mississippi, cuts through the heart of Iowa's most scenic landscape and valued outdoor recreation region.

The UMRCC recognizes the need for effective training experience for the Air National Guard and the necessity to protect national resource values within the Upper Mississippi Corridor. The potential for conflict with the proposal necessitates specific actions to insure protection of these significant resource values.

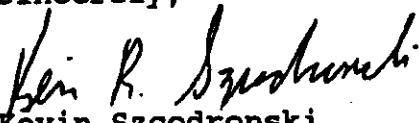
Recommendations/Comments

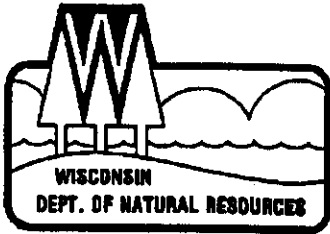
1. Analysis of alternatives for training flights should be exhausted in efforts to identify a non-disruptive and efficient corridor, and most appropriate training techniques.
2. If no other less impacting alternatives are identified, these operations should be limited to site specific locations and times, limiting impacts and facilitating public notification. Any site-specific locations for low-level flights should be proposed and fully analyzed to understand potential impacts.
3. Any flights over significant national resource areas as the Mississippi River, or other areas of critical concern, should be at altitudes precluding significant impacts to resources and human uses of concern.
4. If Air National Guard determines to proceed with perceived low-level flights or other potentially disruptive training exercises, specific operational plans for fly-over of significant natural resources areas should be prepared and made available for public review. In addition, specific

studies to determine specific risk assessment, environmental impacts, recreational impacts, etc. should be completed.

UMRCC members are thankful for this opportunity to provide preliminary comments on this important proposal. Thank you for accepting these comments and incorporating them into project review and development. We look forward to receiving the forthcoming Draft Environmental Impact Statement. Please add our organization to your project mailing list.

Sincerely,


Kevin Szcodronski
UMRCC Chairman



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

PO Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

February 21, 1996

Brigadier General Albert H. Wilkening
Wisconsin Department of Military Affairs
2400 Wright Street
Madison, WI 53708-8111

Lieutenant Colonel Kent Adams
Project Manager Hardwood EIS
Environmental Division
Air National Guard Readiness Center/CEVP
3500 Fetchet Avenue
Andrews Air Force Base, MD 20331-5157

Dear Gen. Wilkening and Lt. Col. Adams:

Thank you for your letters of October 27, 1995 and December 19, 1995, respectively, which were in response to our letter of September 26, 1995. Your letters address our questions relative to the relationship of the recent application from Juneau County to withdraw lands within the Hardwood Range from the County Forest program to the Environmental Impact Statement (EIS) being prepared for the proposed expansion and related airspace actions.

Based on the information supplied in your letters and several staff discussions, we concur that the withdrawal is a separate action from the proposed expansion and related airspace actions. We look forward to receipt of requested information to help in the preparation of an environmental analysis document on the proposed withdrawal, in accordance with NR 150, Wis. Adm. Code.


While we concur that the withdrawal action will not impact decisions made in the larger EIS for the expansion and proposal, it is important that the land ownership history of the existing range be discussed in the EIS. There has been much public confusion over the lease history and the current proposal for county forest withdrawal, and a discussion in the EIS that clarifies the situation would be useful.

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If you have any questions, please call Dave Siebert, who is coordinating the Department's review of the EIS, at (608) 264-6048.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert W. Roden". The signature is fluid and cursive, with the first name "Robert" being more prominent than the last name "Roden".

Robert W. Roden, Director
Bureau of Environmental Analysis and Review

cc: James Barrett- Juneau County
Dale Dorow- Juneau County
Paul Pingrey- Juneau County Liaison
Mike Beaufeaux- NCD
Terry McKnight- NCD
Jim Pardee- EA/6
Bob Mather- FR/4
Kevin Marek- ANGRC/CEVP



HO-CHUNK NATION LEGISLATURE

Governing Body of the Ho-Chunk Nation

August 19, 1996

Captain Dave Olson
Wisconsin Air National Guard
P. O. Box 8111
2400 Wright Street
Madison, WI 53708-8111

Dear Captain Olson:

This letter is written to apprise of the Ho-Chunk Nations' continued concern for its tribal members, traditional religion, tribal lands and enterprises that are under VR 1616. The Air National Guard has published its intent to drop VR 1616 "from further study".

This route is directly over three of the tribes villages known as the Indian Mission, Sand Pillow in Jackson County and Chak-Hah-Chee in Wood County. We have residents who are subjected to loud jet noises and children who hit the dust when one of these trainee pilots decide to drop to less than 300 feet from the ground. Under this corridor we also have Headstart, Day Care and Elderly Centers. Four of our tribal enterprises are directly under VR 1616.

These flights disrupt the tranquility of our homeland in Wisconsin. The Air National Guard also needs to be aware of the fact that our traditional religious practices are being disrupted by the training in VR 1616.

On May 24, 1996, President William J. Clinton signed Executive Order #13007 regarding Indian Sacred Sites which states at Section I.

"Accommodation of Sacred Sites. (a) In managing Federal lands, each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

Executive Offices

W9814 Airport Road P.O. Box 667 Black River Falls, WI 54615
(715) 284-9343 FAX (715) 284-3172 (800) 294-9343

H-45

Captain Dave Olson

Page 2

August 19, 1996

"(b) For purposes of this order:

(i) "Federal lands" means any lands or interests in land owned by the United States, except Indian trust lands;

(ii) "Indian tribe" means an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, and "Indian" refers to a member of such an Indian tribe; and

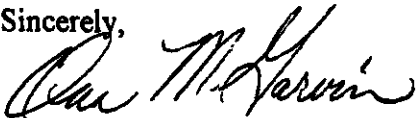
(iii) "Sacred site" means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion has informed the agency of the existence of such a site."

This is to inform you that our traditional leaders have such sites that are under VR 1616 and Air National Guard flights are a disruption to the ceremonies that are conducted. There are other sacred sites under this corridor. On October 17, 1995 a letter was received from Lorraine S. Gross, Archaeologist, Science Applications International Corporation with the following: "We are requesting the assistance of the Ho-Chunk Nation in identifying your concerns regarding traditional cultural resources that might be potentially affected by the proposed action." (Proposed Hardwood Range Expansion and Related Airspace Actions.) No other contact has been made with me or our Historical Preservation Office since October 17, 1995. We pray that VR 1616 be considered for elimination as an ANG training route.

The Ho-Chunk Nation remains opposed to the expansion of Hardwood Range into Wood County as flights are intruding into airspace over our village and disruptive of tribal residents and concerns in that area.

The Native American Church also holds its activities in the outdoors and this causes great disruption throughout our communities in Jackson, Clark, and Wood Counties when these services are being held. Future consideration should be an elimination of VR 1616 and the entire proposed Expansion of Hardwood Range.

Sincerely,



Ona M. Garvin, Legislator, Area IV.

THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release

May 24, 1996

EXECUTIVE ORDER
#13007
- - - - -

INDIAN SACRED SITES

By the authority vested in me as President by the Constitution and the laws of the United States, in furtherance of Federal treaties, and in order to protect and preserve Indian religious practices, it is hereby ordered:

Section 1. Accommodation of Sacred Sites. (a) In managing Federal lands, each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

(b) For purposes of this order:

(i) "Federal lands" means any land or interests in land owned by the United States, including leasehold interests held by the United States, except Indian trust lands;

(ii) "Indian tribe" means an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, and "Indian" refers to a member of such an Indian tribe; and

(iii) "Sacred site" means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

Sec. 2. Procedures. (a) Each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, as appropriate, promptly implement procedures for the purposes of carrying out the provisions of section 1 of this order, including, where practicable and appropriate, procedures to ensure reasonable notice is provided of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites. In all actions pursuant to this section, agencies shall comply with the Executive memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments."

more

(OVER)

(b) Within 1 year of the effective date of this order, the head of each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall report to the President, through the Assistant to the President for Domestic Policy, on the implementation of this order. Such reports shall address, among other things, (i) any changes necessary to accommodate access to and ceremonial use of Indian sacred sites; (ii) any changes necessary to avoid adversely affecting the physical integrity of Indian sacred sites; and (iii) procedures implemented or proposed to facilitate consultation with appropriate Indian tribes and religious leaders and the expeditious resolution of disputes relating to agency action on Federal lands that may adversely affect access to, ceremonial use of, or the physical integrity of sacred sites.

Sec. 3. Nothing in this order shall be construed to require a taking of vested property interests. Nor shall this order be construed to impair enforceable rights to use of Federal lands that have been granted to third parties through final agency action. For purposes of this order, "agency action" has the same meaning as in the Administrative Procedure Act (5 U.S.C. 551(13)).

Sec. 4. This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it, create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by any party against the United States, its agencies, officers, or any person.

WILLIAM J. CLINTON

THE WHITE HOUSE,
May 24, 1996.

#



HO-CHUNK NATION

OFFICE OF THE PRESIDENT

MEMORANDUM

AUGUST 19, 1996

TO: CAPTAIN DAVID OLSON
WISCONSIN AIR NATIONAL GUARD
P.O. BOX 8111
2400 WRIGHT STREET
MADISON, WI 53708-8111

FROM: PRESIDENT CHLORIS A. LOWE, JR.

A handwritten signature in cursive script, reading "Chloris A. Lowe, Jr.", is written over the "FROM:" line.

RE: HARDWOOD RANGE EXPANSION

This memorandum concerns Visual Route (VR) 1616 and Falls One and Two (MOA's). As a sovereign, the Ho-Chunk Nation continues to oppose the expansion of the Hardwood Range. As President of our Nation, I want to go on record stating that I object to any increased use of airspace over or near our sovereign lands.

The following types of sites are considered sacred to Ho-Chunk people. As such, they are viewed as delicate in their environments and sensitive to the kinds of vibrations and noise disruptions caused by low-flying aircraft. This includes religious sites where ceremonies are held, sites where traditional medicines are harvested, and sites where pre-Columbian petroglyphs and pictographs are located.

In addition these areas include communities where our children and elders live. We simply do not want these types of high level noises interrupting our homes and backyards.

For these reasons, I object to the use and in particular, the expanded use of airspace on and near our traditional lands.